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ABSTRACT

The following papers were presented at an invitational conference on cataloging standards: (1) "Canadiana Meets Automation;" (2) "The Union Catalogues in the National Library - The Present Condition;" (3) "A Centralized Bibliographic Data Bank;" (4) "The Standardization of Cataloguing;" (5) "The Standardization of Cataloguing; a summary;" (6) "Standardization of Classification and Subject Headings;" (7) "Standardization of Input and Retrieval in an Automated System;" (8) "Standardization for Serials;" (9) "Standardization for Government Publications;" and (10) "The Means of Achieving Standardization." Resolutions based on the conference are also included. (Author/NH)

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[NATIONAL CONFERENCE ON CATALOGUING STANDARDS

Ottawa May 19-20, 1970]

Sponsored by

National Library of Canada

Ottawa

March 1971

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NATIONAL LIBRARY
OTTAWA

CANADA

BIBLIOTHÈQUE NATIONALE
OTTAWA

March 1971

The enclosed papers were presented at an invitational conference on Cataloguing Standards held at the National Library on May 19th and 20th, 1970.

As the original run of 700 copies of these papers has been exhausted, and as it has been decided not to publish the proceedings of that conference, the papers are herewith re-issued to meet a continuing demand. It should be noted that Paper no. 4 is here represented in two versions - as sent out prior to the conference, and as actually read at the conference.

Research and Planning Branch

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/ Bibliothèque national du Canada

Ottawa

May 19-20 mai 1970

Opening remarks/ Remarques préliminaires

by/par

Guy Sylvestre
National Librarian/Directeur général de la Bibliothèque nationale

NATIONAL LIBRARY
OTTAWA

BIBLIOTHÈQUE NATIONALE
OTTAWA

CANADA

OTTAWA 4

Opening remarks*
by
Guy Sylvestre
National Librarian

Remarques préliminaires*
par
Guy Sylvestre
Directeur général de la
Bibliothèque nationale

Je vous souhaite la plus cordiale bienvenue et je vous remercie d'avoir bien voulu accepter mon invitation à participer à cette conférence nationale, la première d'une série de réunions que je me propose de convoquer en vue de permettre l'étude collective des principaux problèmes que les bibliothèques canadiennes doivent résoudre ensemble si elles veulent réussir à constituer progressivement un réseau d'information aussi unifié que possible. Evidemment, l'idée de réseau n'est pas une idée nouvelle pour les bibliothécaires, et le haut degré de collaboration qui existe entre eux depuis longtemps est un des traits qui honorent la profession. Il existe déjà des réseaux locaux, des réseaux régionaux, un réseau national et des réseaux internationaux. Tous sont susceptibles de perfectionnement certes, tous sont également susceptibles d'une meilleure intégration; les uns doivent être conçus, mis sur pied et perfectionnés dans une localité donnée; d'autres, au niveau régional ou provincial; d'autres enfin, à l'empan du pays, voire du monde entier. Mais nous savons que pour avoir un réseau il faut plus que la quincaillerie; il faut une langue et des règles communes.

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*National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada May 19-20 mai 1970

La Bibliothèque nationale du Canada doit donc être le coeur même d'un réseau qui couvre le Canada tout entier, un coeur dont les battements font circuler le sang jusqu'aux membres les plus extrêmes certes, mais qui permet aussi aux divers membres de se vivifier réciproquement. Cette osmose fécondante est singulièrement favorisée par le catalogue collectif national qui relie les bibliothèques les unes aux autres et en fait pour ainsi dire des vases communicants, ce qui contribue à élever le niveau de leurs services respectifs. Cela est aussi vrai de la bibliographie nationale qui est à l'usage non seulement du pays, mais aussi de l'étranger. La Bibliothèque nationale du Canada ne joue donc pas seulement un rôle national, elle a aussi une vocation internationale et les deux doivent être conjugués pour le plus grand bénéfice des Canadiens et des autres. Cela devient de plus en plus vrai depuis que la conférence d'experts tenue à Copenhague l'an dernier a recommandé comme moyen de normalisation des catalogues la normalisation des bibliographies nationales elles-mêmes. Peut-être pourrez-vous dire un mot à ce sujet, Dr. Lunn, au cours des discussions? ainsi que du rapport Gorman!

It is not my intention to discuss here any of the problems which will be debated today and tomorrow; this I shall leave to the experts. I should like to express a special word of thanks, however, to those who have agreed to prepare position papers for this conference. I read them all and I am now more optimistic than ever before about the usefulness and outcome of this meeting. I am confident that such good papers, where many basic problems are examined with imagination, cannot but generate

a thoroughly interesting and constructive discussion of several of those problems which are exercising our minds these days. The enthusiastic response to my invitation, evidenced by your presence here, is most encouraging indeed, and augurs well of the future development of an integrated national library network. A great deal of efforts, research, planning and money will be required before we have such a unified network in Canada; and many more debates such as these will be necessary before a large measure of agreement is reached on standards acceptable to all interested parties, as well as on the respective role of the latter in a national system.

Solutions must also be found collectively to many administrative and financial problems, and meetings of chief librarians of the principal Canadian libraries will be also required in order to formulate proposals for the consideration of their respective governments or administrations. We shall have to water our wine, however,- and all of us - if we are to succeed in developing cooperatively the kind of library system which the research community naturally expects to see emerge in this electronic age. I am determined to see to it that the necessary leadership is provided in order to attain this object, but the National Library cannot do everything and we count on your full cooperation in the pursuit of common goals. One should always remember that members of a network should not be passive, they should be active, they should be reactive, they should contribute to the life and development of the system.

The National Library does have a special responsibility with respect to the compilation of the national bibliography and to the maintenance of the national union catalogue, and we have now been engaged for some eighteen months in a detailed and full re-examination of our policies and methods in respect of these two central bases of bibliographic data, as well as of other bibliographic tools generally. The report of the study team, which is at the final editing stage, will cover some 700 pages and will receive our attention in the weeks and months ahead. Its findings and recommendations will be discussed fully and frankly with the Canadian library community, and also with those national libraries with which we have especially close relations. I said before on a number of occasions - and I repeat here - that the future of the National Library would not be planned in isolation, and I propose to call other conferences such as the present one in order to have debated by qualified representatives of the library community other library problems of national scope such as indexing and abstracting services and other records of published and unpublished material; and efforts will be required in order to extend the best treatment accorded to books and to periodicals, to such other research material as microforms, manuscripts, sheet music, maps, phonograph records, photographs, prints, catalogues of exhibitions, theatrical and musical programmes, etc. I shall have more to say about this when I address the annual meeting of the Canadian Library Association in Hamilton next month.

I felt, however, that the calling of a meeting to discuss bibliographic standards at the national level should not be postponed any longer. The advent of electronic techniques for storing, processing and transmitting bibliographic information already has a considerable impact on library methods and techniques, as well as considerable financial implications. It has become imperative accordingly to obtain as much compatibility as possible among local, regional, national and international systems, and this will require extensive and intensive studies. Many such studies, plans and developments are already known to us and they should be carefully analyzed; they should not be imported and adopted blindly, however, for we must make sure that the suit is made to our measure. We must, however, cooperate closely with other countries with a view to standardizing bibliographic descriptions not only in order to obtain more standard data bases but also to make such a data base as the national union catalogue manageable, and I hope that its records will be as rich in detail as possible!

My hope is not to see you agree in two short days on standards for the treatment of various catagories of library material - this would be utopian - but I sincerely hope that, as a result of these discussions, we will all have a fuller and clearer understanding of the problems that must be solved before we develop a common language for the exchange of bibliographic information in digital form, and indeed agree also on common standards for manual systems, for we will have to live with both for several years. These problems will be elicited in the excellent papers which were prepared for this conference. My hope is that agreement will be reached on the creation of task forces to tackle the main problems that must be solved; that these task forces will be made up of qualified experts representing various categories of libraries from all parts of Canada, and on which the National Library would be represented by senior personnel; that the work of these task forces will be coordinated by the Research and Planning Branch of the National Library, which will also coordinate these studies and plans with those of foreign and international networks under development. This, it seems to me, is the best machinery that can be realistically devised in order to provide the required leadership, coordination and continuity, as well as to get the library community involved directly in the continuing process of planning and implementing future developments of library services at the national level. You already know, I am sure, that a Research and Planning Branch is being created in the National Library - the various posts will be advertised before the CLA meeting next month and filled by nation-wide competitions. I trust that this kind of coordinating agency will be acceptable to the library community, thanks to the involvement of the task forces suggested a moment ago which would make it impossible for the National Library to attempt to establish standards single-handedly and to force these upon Canadian libraries. No such attempt will be made, and I count on the active participation of many Canadian librarians in the development of library networks, and even in the improvement of the services provided by the National Library itself. Large data bases in the National Library should be designed with a view to meeting the requirements of the users.

Well, so much for generalities. I should not delay much longer your discussion of specific problems. The first two papers are background papers stating the present condition of the national bibliography and of the national union catalogue. These first two papers are not meant to be discussed, for the technical problems they identify all are discussed successively and systematically in the following papers which, I am sure, will give rise to constructive comments and suggestions.

Last night, as I was looking at my notes for the last time, it occurred to me that there was a very important point which I had failed to emphasize in my prepared statement; and it is that it is essential that the benefits of the best manual systems be fully preserved in computerized data banks. This is essential. We must make sure that we do not sacrifice anything worthwhile in the process of automating our operations. And I was reminded of a story which Harry Boyle likes to tell of the three birds which were sitting on a shovel-handle in Edmonton. There came a horse-drawn vehicle and, as they were watching it go by, a plentiful supply of processed Alberta oats was deposited on the pavement. They immediately hastened to gorge themselves, then flew back to the shovel handle. A moment later, the first bird flew off and, fifty feet away, dropped dead. The second bird then took flight and, after one hundred feet, dropped dead too. The third bird then flew away and, after flying some one hundred and fifty feet also crashed on the roadway. The moral of the story, concludes Harry Boyle, is to hang on the handle.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque nationale du Canada

Ottawa

May 19-20 mai 1970

List of Participants/Liste des participants

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque nationale du Canada

Ottawa

May 19-20 mai 1970

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NATIONAL CONFERENCE ON CATALOGUING STANDARDS

MAY 19 - 20, 1970

NATIONAL LIBRARY OF CANADA, OTTAWA

Room 156

Chairman: Lachlan F. MacRae
Associate
National Librarian

A G E N D A

May 19. 9 am - 12 noon

1. Opening Statement, by Guy Sylvestre, National Librarian (Outline of what the conference hopes to achieve)

2. The National Bibliography, by Clarisse Cardin, National Library Conference Paper No. 1 (The present condition of Canadiana, its coverage, depth and kind of treatment of material, projected development, problems).

3. The National Union Catalogue, by Martha Shepard, National Library. Conference Paper No. 2 (The present condition of the Union Catalogue, the demands made upon it, the service provided, problems created by volume and variation of input and demand).

COFFEE

4. A Centralized Bibliographic Data Bank, by Hope Clement, National Library. Conference Paper No. 3 (The systems development project of the National Library, tentative proposals for an automated union catalogue, services which may be practicable in the light of technical and financial constraints, integration with manual systems).

May 19. 2 pm - 5 pm

5. Standardization of Cataloguing, by Jean Lunn, National Library. Conference Paper No. 4 (Objectives and objections, movement towards an international standard, the kind and extent of standardization needed, a common standard for catalogues and national bibliographies).

COFFEE

6. Standardization of Classification and Subject Headings, by Rosario de Varennes, Université Laval.
Conference Paper No. 5
(The purposes of standardization, the need for standardization with particular reference to the use and development of Canadian classifications, F5000, PS8000, K, and of Canadian subject headings, French and English, the need to equate French and English headings).

May 19. 5:15 pm

Reception by National Librarian.

May 20. 9 am - 12 noon

7. Standardization for Input and Retrieval in an Automated System, by R.W.MacDonald, University of British Columbia.
Conference Paper No. 6
(Format; search codes; essential elements for recovery of individual bibliographic records, and of records associated by reason of authorship, subject, series, publisher or other element; changes and additions to manual records in preparation for automation).

COFFEE

8. Standardization for Serials, by W.E.Clyde, National Science Library
Conference Paper No. 7
(The purposes of standardization, requirements for union lists, cataloguing, subject analysis, classification and/or shelf arrangement of serials).

9. Standardization for Government Documents, by Margaret Beckman, University of Guelph
Conference Paper No. 8
(The purposes of standardization, requirements for union lists, cataloguing, subject analysis, classification and/or shelf arrangement of documents, the justification for treating documents as a separate category of material).

May 20. 2 pm - 5 pm

10. The Means of Achieving Standardization, by Donald Cook, Ontario Universities Bibliographic Centre Project
Conference Paper No. 9
(The feasibility and effectiveness of such means of achieving standardization as the adoption of a single cataloguing code, of one classification system, of centralized processing, co-operative cataloguing, edited shared cataloguing, cataloguing in-source for at least some publications, the implications of dependence on Library of Congress cataloguing, the role of the Canadian national bibliography in standardization).

COFFEE

11. Plan of Action, discussion led by Lachlan F. MacRae, Associate National Librarian.

    (Summary of problems, establishment of priorities, selection of tasks to be undertaken, costs in money and manpower, time required, organization and initiation of joint effort).

ENGLISH TRANSLATION

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE
SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque nationale du Canada

Ottawa

May 19-20 1970

Conference Paper No. 1/Document de la Conférence no 1

Canadiana face à l'automatisation

par

Clarisse Cardin
Chef intérimaire, Division de la bibliographie nationale
Bibliothèque nationale du Canada

CANADIANA MEETS AUTOMATION[*]

by

Clarisse Cardin
Acting Chief, National Bibliography Division
National Library of Canada

Before planning Canadiana's future, it seems appropriate to review the various stages of its development, to consider some current problems, to mention a few projects presently under study and to determine the standards that should apply.

The first separate issue of the national bibliography, which appeared in January 1951, listed trade books in alphabetical order, followed by federal government documents. As early as 1952, the entries in Part I were arranged by subject according to the main classes of the Dewey Deciaml Classification, with verbal subdivisions; an author and title index referred to the entries in the classified part. The establishment of book deposit regulations, in 1953, was an important contribution to the growth of Canadiana. A third part, provincial government documents, was added to the national bibliography in 1953.

From 1954, the use of a Varityper improved the appearance of the text. Although no new category of materials was added to Canadiana between 1955 and 1963, the number of items listed increased from 4,853 in 1955 to 12,164 in 1963, when the classified arrangement became more detailed, each entry being given a very precise Dewey number. A fourth part, Films and filmstrips, and an index to government documents, both federal and provincial, were introduced in 1964.

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[*] Translation of a paper given at the National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No. 1

Quite apart from whatever delays may occur in cataloguing, the mechanics of the operation is such that there is an inevitable wait period of 5 to 9 weeks between the receipt of a book by Canadiana and the appearance of the listing (or catalogue entry) in the monthly issue. In an effort to improve this situation we initiated, in 1966, a weekly proof service which provided all entries then in Part I (except fiction and music). We send these proof service entries, among others, to the Library of Congress as a contribution to its Shared Cataloguing Program.

In 1967 several changes were made in Canadiana: subject headings were added to entries in Part I; pamphlets of ephemeral interest were removed from Part I, brieflisted and put in a new section; theses on microfilm were withdrawn from Part I and placed in a new section entitled Microforms.

In July 1967 a study was made of possible methods for automating the index to Canadiana. The system selected allowed for easy editing, updating and reformatting of the text. Experience proved that these operations required more time than we had expected. The tagged information is entered into the system on a terminal located in the Library. It is then stored on a disk, and later transferred to magnetic tape. The computer is programmed to create the required number of entries and to produce a printout using lower- and upper-cased letters and diacritical marks. The printout follows library filing rules, English and French, including certain exceptions to strict alphabetical filing. The first automated index appeared in the April 1968 issue and the first cumulated index in the June issue. As a result of automation, the typing of thousands of cards containing the same data in a different order was avoided, as was the filing of these cards and the mounting of the indexes to the monthly issues and to the annual cumulations. In addition, automated procedures made possible the indexing of the six parts without a great deal of extra work and the publication of the quarterly, semi-annual and annual indexes which were so greatly needed.

1968 was the year of the adoption by Canadiana of the Anglo-American Cataloging Rules, somewhat modified by the requirements of a bilingual catalogue.

The automation of the whole of Canadiana was part of a feasibility study, now nearing completion, for the purpose of setting up an integrated information system for the various activities of the National Library. When the time comes to automate the bibliography as well as its index, the librarians responsible for Canadiana will be able to make use of the experience in data processing acquired while automating the index and will also benefit from the standardization initiated by the MARC programme. We are longing for the day when, owing to automation, the material preparation of Canadiana will be accelerated, cumulations will appear more frequently, selective printouts will be provided, catalogue cards will be produced as well as tapes carrying bibliographical data which can be used in a national network later to be linked to an international network. Even before the creation of the network, the National Library will make cards and tapes available for sale to other libraries. Input from Canadiana into the National Union Catalogue will be achieved with little delay.

Standard book numbering was introduced in Canada in the autumn of 1969. Canadiana began immediately adding to its entries the standard book number appearing in some of the books. This number will probably be used eventually for information retrieval.

Canadiana 1970 presents a few innovations. Since September 1, 1969, revised deposit regulations issued pursuant to the new National Library Act require the deposit of phonograph records and audio tapes which have a Canadian connection, such as composer or performer. Because of this we have added to Canadiana 1970 a section of sound recordings. As soon as possible we intend to indicate the Canadian content of each recording. L.C. classification numbers are now given to entries in Part I. When the notation is to be subdivided alphabetically by subject or region, we mention only the basic L.C. number, leaving to the libraries the addition of a Cutter number already used in their own catalogues or the assignment of one based on the language of their choice. We might later add an asterisk to show the omission of the subdivision. As a third innovation we now indicate the Queen's Printer's catalogue numbers at the end of entries for federal government documents.

The January 1970 issue came out only in April and its contents shows some delay in the listing. The enforcement of the new deposit regulations has meant extra work, and for a few weeks the books took more time to reach the cataloguing shelves. The National Librarian likes to say that now that the law requires the books to be deposited within one week from the date of their publication we can no longer hold the publishers responsible for the lateness of some entries in Canadiana. However, we can attribute a large part of the delay in the last few months to processing difficulties over which we had no control. The production of the index was held up by the search for an unusual typographical error in the input for which no diagnostic had been included in the programme, and by the installation, at the end of the year, of a third generation computer. Other difficulties occurred which were caused by faulty printing tapes. Finally, the staff of the National Bibliography Division has not increased in the same proportion as the number of books to be catalogued and the amount of bibliographical information supplied. The situation is improving: with the recruitment of new staff, a redistribution of the work and, if necessary, the installation of a second terminal, we believe that Canadiana will become up to date in a short time.

The national bibliography should appear more promptly and should list very recent publications if it is to fulfill its rôle; this was the main desire expressed by some 750 libraries of all types in answer to the questionnaire sent out by the Editor of Canadiana in 1968. Apart from this justified criticism, the answers contained favourable comment and many suggestions which will be of great value in planning for the Canadiana of the seventies.

In their replies, the libraries asked for more prompt and frequent cumulations, subject headings and classification numbers assigned to a larger number of publications, the inclusion of sound recordings, a more complete coverage of provincial government documents. More than half of the libraries expressed some interest in printouts by subject or other data contained in Canadiana. Lastly, a number of libraries would be prepared to subscribe to a card service for Canadian books provided the cards were available soon after the publication of the volumes.

We have begun to respond to these requests and we have several plans of this type in mind. Our first objective is to bring Canadiana up to date. There is no doubt that when Canadiana is automated, cumulations will be published more promptly, as was the case with the Deutsche Bibliographie.

Cumulations of both the bibliography and the index for a period of more than one year are not practical under the present manual system. However, we intend to publish cumulated indexes: 1963-1967 is in preparation. When Canadiana has been brought up to date, and even before automation, we plan to replace the weekly proof sheets by catalogue cards if the number of requests from libraries warrants such action.

In the near future we intend to add to the national bibliography other categories of library materials, such as maps, posters and audio-visual educational kits. As microreproductions became subject to the deposit regulations from January 1, 1970, the microform section is likely to develop considerably during the current year.

Next year we intend to add classification numbers in other parts of the national bibliography. As soon as possible, we will add subject headings in English and in French to all entries in Part I. Subject fields, classification, and subject words will be important access points in a computerized system. Subject information might be retrieved through subject headings or descriptors instead of by means of the present classification schemes, which are not applied consistently by all libraries and are thus difficult to equate. For this reason, a subject heading specialist has begun compiling a corresponding list of the English and French subject headings used in Canadiana in order to permit the retrieval of information in one language or the other, and the production of cards with subject headings either in English or French according to the working language of the user library.

We expect to prepare soon conventional entries for most of the pamphlets and for government serials.

While making the national bibliography more useful, we want also to standardize its essential data in conformity with present international standards. Particular attention will be given to the standards which this Conference will consider the most important for the retrieval of information. It is obvious that the standards applicable to national bibliographies should be sufficiently inclusive to enable searchers to retrieve from these permanent records of the intellectual production of the various countries all the data they seek in whatever form presented.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque nationale du Canada

Ottawa

Mai 19-20 mai 1970

Conference Paper No. 2/Document de la conférence no. 2

The union catalogues in the National Library - the present position

by

Martha Shepard
Director, Reference Branch
National Library of Canada

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THE UNION CATALOGUES IN THE NATIONAL LIBRARY - THE PRESENT CONDITION*

by

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I am happy to report that the Union Catalogue of Books and the Union Catalogue of Periodicals are alive, growing and giving service. The location requests received have increased by 30% every year up to 1969-70. In 1959-60, 10,700 requests were received, in 1964-65 the total was 29,800 and in 1969-70 we reached 87,200. This sharp increase in volume indicates that the union catalogues are accomplishing the main purpose for which they were established, namely, to provide location information to libraries and researchers. The service made possible by the catalogues, the fact that 75% of the requests are located in Canadian libraries and that at least 60% of the requests are answered within twenty-four hours, are all points which the Macdonald report omitted to mention. Instead, the report dwells upon the defects of the catalogues, giving the impression that the National Library has not been aware of these deficiencies or was apathetic about them.

This is far from the truth. The Union Catalogue of Books began in 1950 when the first few libraries were microfilmed, enlargements made from the films and the cards interfiled into a few drawers. Microfilming continued until September 1966 when the last major filming was completed. Since that time, the libraries which have started reporting to the catalogue have been new colleges and universities and special libraries which were able to make copies of their cards and send them to Ottawa for incorporation into the Union Catalogue. Many of these libraries report selectively rather than completely and this is to be preferred since there is no necessity for the Union Catalogue to record up to thirty or even fifty copies of a book which is in every library in the country. It should always be kept in mind that the chief purpose of the union catalogues is to provide information about the location of material which is needed on inter-library loan. There is no justification for spending the tax payers' money on records of material which is readily available in the major library centres across the country. Chapter 11 of the Macdonald report contains several critical comments which are based on the false premise that every book in every library in the country should be recorded in the Union Catalogue, which is both impossible and undesirable.

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*National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai, 1970. Conference Paper/Document de la conférence No 2

The Union Catalogue of Periodicals was begun in 1957 when the National Library assumed the responsibility for co-ordinating the reports of periodical holdings from those libraries reporting to New Serial Titles. The reports are collected, checked, one copy of each report is interfiled into the Union Catalogue of Periodicals and, at the end of each month, the other copy is sent to the Library of Congress, going via the National Science Library where a record is made of all scientific and technical titles. This file of New Serial Titles reports gradually developed into the Union Catalogue of Periodicals as more and more cards for periodicals were withdrawn from the Union Catalogue of Books and filed here.

Both catalogues have defects and are expensive, slow and inefficient to operate. The National Library is aware of this and has made progress in correcting many of the defects and has high hopes that greater progress will, with everyone's co-operation, be made in the near future. The multiple files in the Union Catalogue of Books which have been justifiably criticised by library surveys came about because the work load of the Reference Branch of the National Library increased at a much faster rate than did the staff available to perform the duties. During the 1950's and early 1960's, when the emphasis was on microfilming a number of libraries each year, the union catalogues doubled in size during several single years. There was a steady annual increase of 30% in the location requests processed. Each library that was added to the union catalogues meant that more accessions were received in every subsequent year. In addition to all this, the staff of the Reference Branch assumed the responsibility for sorting and arranging on shelves the thousands of serials and government documents which were being received daily from other libraries. If the growth of the union catalogues and of the staff available to work on them were to be plotted on a graph, the line representing the work load would rise much more sharply than would that representing the staff. A few figures will show this.

	Staff	Union Catalogue of Books		
		No. of Libraries reporting	No. of Accessions received	No. of Location Requests processed
1955	8	93	111,000	2,200
1960	12	140	174,000	8,300
1965	32	224	458,000	29,800
1970	52	300	1,212,000	87,200

It is readily apparent from these figures that, if the National Library had been granted staff increases in proportion to the work increase, during the period from 1950 to 1962, the Union Catalogue of Books would be better organized to-day.

The present state of the union catalogues is more encouraging to-day than at any previous time.

	No. of drawers	No. of drawers with 2 sections	No. of duplicate cards eliminated
Union Catalogue of Books	7,500	3,188	665,600
Union Catalogue of Periodicals	227	--	--

It should be noted that approximately one half of the total drawers in the Union Catalogue of Books have now been reduced to two sections only and that 50% of the cards received during the year have been combined onto one master card and the duplicate cards eliminated. This keeps the size of the catalogue partially under control. The many different files which were mentioned in the Macdonald report have been eliminated. The Union Catalogue of Books now has one main file and a supplementary file of the recently received accessions which are put into one alphabet before being transferred to the experienced filers for incorporation into the main catalogue. The Union Catalogue of Periodicals has always consisted of one file only with no back-log. The catalogues of the universities of Toronto, McGill and Laval are still on microfilm and will remain so until the future of the Union Catalogue of Books is settled. Contrary to the impression given in the Macdonald report, these catalogues are not inaccessible, but are consulted many times each day. The microfilms have been placed in cartridges and are used on a reader which provides rapid access to any card on the film.

Because of the increasing work pressures mentioned previously, several of the catalogues filmed between 1960 and 1966 have not been incorporated into the catalogue. Enlargements were made from the microfilms but sufficient staff has never been available to cut them up and interfile them. These films are consulted occasionally but this is a time consuming and expensive operation and is only done when sufficient locations have not been found within a reasonable distance from a requesting library. A very small dent is being made in this back-log by using the stack men to cut up the enlargements when they are not busy shelving or retrieving books. As they are cut up, they are added to the recently received cards and gradually incorporated into the main catalogue. It is not planned to put any more emphasis upon completing this phase of the work until plans for automation have been developed and we know whether or not it will be necessary to interfile these cards.

A depressing development during the past year has been a slowly growing back-log in filing the newly received accessions. This now consists of 365,000 cards, out of the total 1,300,000 cards received in 1969-70. The work of interfiling these accessions is tedious and boring and at the same time it requires a high degree of accuracy and concentration and staff turn-over has always been high in this area. Several changes leading to greater efficiency have been made in the last few months and we hope that this back-log can be reduced somewhat.

The problems facing the union catalogues are many. First, the size of the catalogues. It is estimated that in five years, by 1973-74, the number of accession reports received will have doubled and that the floor space necessary to accommodate the catalogue cabinets and the staff will have grown from the present 2,000 square feet to nearly 10,000 square feet. It is clear from this factor alone, that the conventional catalogues cannot be maintained in the present form much longer.

One of the chief problems which has haunted us from the beginning has been lack of uniformity in cataloguing. Not only does the Union Catalogue of Books have to deal with material which has been catalogued according to two cataloguing codes, but there are the multiple small adaptations which each library makes to any code because of their particular needs or because of something which was begun long ago and which must now be followed. In addition, there are the many variations which can be produced because of our two official languages. Such a well known publication as Taverner's Birds of eastern Canada was reported to the Union Catalogue of Books under these headings -

Taverner, P.A.

Taverner, Percy Algernon

Canada. Dept. of Mines.

Canada. Dept. of Mines and Resources.

Canada. Dept. of Mines. Geological Survey of Canada.

Canada. Dept. of Mines. National Museum of Canada.

Canada. Mines, Dept. of.

Canada. Mines. Dept. of. Geological Survey.

Canada. Geological Survey.

Canada. National Museum.

Canada. Wildlife Service.

Numerous examples of this kind of variation could be cited.

The amount of information supplied on the catalogue cards varies greatly from library to library. Some send Library of Congress cards or unit cards with complete bibliographical information. At the other end of the scale are the cancelled order cards or order slips for LC cards. In between these extremes are the cards from libraries which do simplified cataloguing. On many of these cards, there is insufficient information to determine whether the book is the American printing or the English; whether it is a first or second edition, etc. How important this information is, you will have to decide, but in the meantime, the organizers of the union catalogues cannot edit or combine these cards for fear of making a wrong assumption and losing information which may be needed later.

There is also the question of whether there should be more than one approach to the information in the union catalogues. At present, the main entry is the only possible one. A few added entries have been made when editing has been done, but because of lack of time, this has been kept to a minimum. Should we also consider a subject and title approach? This is not possible as long as the catalogues remain in their present form.

One further thing which must be considered is what type of information you wish to have stored in the union catalogues if they are to accomplish not only their chief function of providing location information but also several secondary functions. Should exhaustive bibliographical data be retained? Should they be a tool which can be used in the preparation of authors' bibliographies? Can they be expected to assist libraries in developing acquisitions policies? Should complete bibliographical information for all types of publications be retained or just for Canadian publications? How much bibliographical information should be recorded even for Canadian publications?

Until some guide lines have been developed for standardization of cataloguing entries, for the amount of bibliographic information to be reported and for the various approaches which should be provided by the union catalogues, there is little that we can do except to continue as best we can to interfile the growing number of cards received, edit and combine as much as possible in order to keep the size down a little and to look longingly to the time when automated methods will solve some of these problems.

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A centralized bibliographic data bank

by

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A CENTRALIZED BIBLIOGRAPHIC DATA BANK *

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Note: Numbers in parentheses throughout the text refer to items in the bibliography.

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* National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No. 3.

** Appointed Assistant Director, Research & Planning Branch, October 1971.

ABSTRACT

This paper does not attempt to provide solutions to the many problems concerning centralized bibliographic data banks but rather to raise the questions which must be resolved before a data bank can be designed or implemented. The range of services which can be provided from a centralized data bank is discussed, as well as the contents of the bibliographical records which make up the data bank, the various bibliographical elements, their utility and their effect on cost. The data bank and its part in the library community raise the question of the formation, organization and funding of a network. Possible elements of data bank networks requiring standardization are discussed and the whole subject is illustrated by an outline of alternative possiblities for the automation of the Canadian Union Catalogue.

RESUME

Cet exposé ne prétend pas solutionner les problèmes relatifs à une banque centrale de données bibliographiques mais plutôt soulever les questions qui doivent être dissipées avant qu' une banque de données puisse être projetée et développée. L'étendue des services qu'une banque centrale de données peut fournir est débattue ainsi que le contenu des notices bibliographiques, les différentes données bibliographiques, leur utilité et leur influence sur le coût. La banque de données et son rôle dans le monde des bibliothèques soulèvent la question de la formation, de l'organization et du financement d'un réseau. Les données possibles des réseaux de banques de données exigeant une normalisation sont débattues et le tout est illustré par un tableau des alternatives possibles d'automatisation du Catalogue Collectif canadien.

A CENTRALIZED BIBLIOGRAPHIC DATA BANK

I. Introduction and scope of this paper.

James Thurber once said that it is better to ask some of the questions than to know all the answers. This is the approach which will be taken in this paper. It will contain no solutions to the problems of bibliographic data banks, but will attempt to pose the basic questions which must be considered before a data bank can be established; questions on the requirements of the library community which the data bank is to serve, on the use that will be made of the bank and on the resources of money and manpower that must be provided to establish and maintain the bank.

A bibliographic data bank is a medium of exchange of information. At the beginning of this conference on standardization I wish to state a platitude, which is self-evident, but which we should not overlook. If libraries are not going to exchange their bibliographical outputs and use one anothers', there will be no need for standardization and each library can catalogue and develop bibliographical data to suit the needs of its own clientèle. Thus the basic question is what are libraries going to exchange and why. What and how far libraries should standardize must be based on decisions, and not on mere assumptions, on what Canadian libraries want to exchange in the way of bibliographic data and how they intend to use central sources of data. We must determine an actual need for each type of data before supplying it.

This paper will discuss services that can be provided from a centralized bibliographical data bank, the information which should be includedin the bank, the establishment of a network serving and using the bank, the standardization needed in a data bank and will illustrate these aspects with reference to the existing Canadian bibliographical data bank, the Union Catalogue, and proposals for its automation and future applications. In discussing data banks, the paper will deal in general with data for monographs, but most of the points raised will also be applicable to other types and forms of material.

I would like to stress at the outset that the opinions expressed in this paper are not necessarily those of the National Library or even my own. I intend deliberately to take the part of a devil's advocate in order to raise questions and to evoke discussion on all aspects of data banks. "Questions are never indiscreet, answers sometimes are", as Oscar Wilde said. Feedback from the Canadian library community is essential to the National Library or to any other body contemplating the development of a bibliographical data bank. Libraries will be the users and they must state their requirements for a data bank and the contribution which they are prepared to make to its realization.

II. The data bank and its services.

A centralized bibliographical data bank may be defined as a collection, in a central location, of bibliographical information describing and providing clues to documents. This bibliographical information does not retrieve either the physical documents themselves, although their location in particular libraries may be part of the information, or the contents of the documents. The bibliographical information is composed of records describing physical items, documents, and providing approaches to them. These records are normally organized in such a manner that the clues lead to the full description of the item. The data in the central store is intended to be both used and, at least partially, provided by persons at locations other than the central one, in other words by a network of users.

The services that can be provided from a centralized bibliographical data bank depend on its content, both the number, range and type of records included and the data elements comprising each record. The greater the number of records and the more complete and detailed the information contained in them, the greater the possibilities for various centralized services which can be based on the data bank. In this section I wish to examine the whole spectrum of services, from a simple location service, at one end of the scale, to a full cooperative processing and reference service at the other. In the next section, I will be discussing the elements comprising the records.

Existing bibliographical data banks are chiefly some form of union catalogue. This may range from a simple location tool, accessed only by main entry and providing a minimum of bibliographical detail, to a catalogue giving full bibliographical detail, providing multiple approaches and not only locating, but showing the status of each item in the holding libraries. This can be accomplished in an automated catalogue by constantly updating the file to include the current in-process and circulation records of participating libraries. Beyond a straight location service, assistance in interlibrary loans can be given by directly routing a request to the nearest library having a copy of the required item which is currently not in use. Inclusion of local call numbers will enable the holding library to retrieve the item from its store and ship it to the requesting library without having to consult its own records. This type of union catalogue is very costly in programming and software development, in the number of characters which must be stored for each record, and in the processing time required for constant updating of the status of records.

A bibliographic data bank can also serve as a basis for centralized processing, including cooperative cataloguing, and for the national center which is responsible for the collection of bibliographical information from other countries and the production of bibliographical data on its own publications. The idea that each country should be responsible for compiling bibliographical data on its own publishing output and for distributing this data to other countries is an attractive and practical one. The central bibliographic data bank would be comprised of full cataloguing information on all items likely to be needed by the community it serves. The data could be built up from MARC tapes issued by many countries and from original cataloguing supplied by the national center and by participating libraries. The services available from this type of data bank could provide both machine-readable and hard copy products.

Machine-readable records could be provided to libraries by subscription; selection of records making up individual subscriptions could be based on MARC records from selected countries, or subsets of MARC records, chosen by language or subject for example. Record selection for an individual library could be made by comparison with a profile of the library's acquisition policy. Also individual records could be ordered on demand. Records could be distributed in batches on tapes, or by an on-line terminal which could transmit simultaneously hard copies of the records and the same records in machine-readable form, via paper tape. Another alternative would be for libraries to receive cataloguing copy in real-time; cataloguers could query the central data bank directly from a terminal while they are in the process of cataloguing an item.

Since some of the libraries using the central data bank would not be in a position to use machine-readable copy, the service would also provide, according to a selection profile or by individual record request, hard copy products, ranging from a unit catalogue card in standard format, to a complete set of processing products such as card sets with added and subject entries typed on, book cards, labels, and pockets. Another service could be the production and updating of book catalogues for individual libraries.

Cooperative processing raises the question of tailoring the products to the requirements or wishes of individual libraries, by selecting and changing the data elements as specified by each library and by formatting printed products as desired. This tailor-made service, like all individual, as opposed to mass-produced, services, is exceedingly expensive to provide. It is probably the kind of luxury which a modern library can no longer afford and this is one of the reasons that we are attending a conference on standardization.

A central cataloguing service and data bank could also generate catalogues, manual, card or book or in machine-readable form, for its participating libraries. Thus, duplicates of subsets of a library's catalogue could be produced as required for new branch or departmental libraries. The service could also produce an automatic catalogue for new libraries by selecting records to match its acquisitions. A central data bank could be built on and could assist libraries in cooperative retrospective catalogue conversion to machine-readable form. It would be of invaluable assistance in a recataloguing or reclassification project; records could be provided from the data bank according to the new cataloguing rules or classification system which a library wished to adopt. The central data bank could also be used to replace library catalogues lost by fire, vandalism or deterioration. Data could be provided to local systems, such as schools or public libraries, which want to set up a central processing center for their branches. The central data bank could even be used to completely replace the catalogue in local libraries. This has been suggested to me as an application of the Union Catalogue, by some small federal government departmental libraries. These libraries might no longer keep a catalogue on their own premises but would query the central catalogue data bank by terminal to locate items in their own and in other libraries. In many ways a national cataloguing service, providing the whole range of possible cataloguing products, would develop into a central library computer utility.

A data bank composed of union holding records of a region or country can be used to support a cooperative acquisition policy. Searches of the data bank could analyse the contents of collections of individual libraries and determine their strengths and weaknesses. The data bank could serve to locate special collections and to refer researchers to libraries holding required items or collections. This centrally available knowledge of collections would assist in rationalization of library acquisition policies and in collection specialization; libraries responsible for procuring and storing resources in particular fields could also be responsible for providing the data bank with bibliographical information on their specialities through shared cataloguing. A current awareness service from MARC tapes and other accessions to the data bank, based on profiles of libraries' collection policies, could keep them informed of new material in their specialities and provide them with basic selection and acquisition information. If the central bank also included in-process information on items on order in particular libraries this would further reduce the danger of unnecessary duplication of expensive material in a country or region. Easy updating of the central data bank by automated means would permit transfer of material among libraries, including the removal of infrequently consulted books to a central store and the transfer of book stocks among libraries. For example, in the case of a professor with a rare subject speciality who moves from one university to another, the specialized book collection which had been formed for him at his original university could by agreement be transferred with him to the new university. The difficulty in transferring book stocks now is chiefly the problem of removing the records from one catalogue and recreating them in another; with an automated central data bank, this updating of central and local records could be done very easily.

The bibliographical research and reference services available from a central data bank, depending on the coverage and detail of its records, are virtually unlimited. They range from the production of various union lists of serials and other types of material or subjects, to services to individual researchers such as the on-demand production of individually tailored lists and bibliographies, and the answering of bibliographical inquiries. A central bibliographical data bank can make the resources of the nation really accessible to everyone. Bibliographical research in a sophisticated centralized system can be done by real-time consultation of the data bank from remote locations.

The central data bank can be used to provide management information such as, statistics on library collections, their composition, currentness and use; to take bibliographic samples for experiment and research; and to collect feedback information from users of the file for evaluating the adequacy of the system in terms of satisfied searches, response times, etc. An augmented data bank containing data for parts of books and for journal articles could provide for all bibliographical needs of users and could be used as a basis for a Selective Dissemination of Information service. Future applications of large bibliographical data banks are many.

Services possible from a central data bank seem practically unlimited, but how can they be realised? Realization depends on the resources of collections, staff and funds which can be provided by the community supporting the data bank, I will be discussing these later in connection with networks. Most of the services and applications which have been described above are possible only through modern communication and automation techniques. Manual systems can no longer handle the huge volumes and provide the multiple approaches needed to fulfill the modern information needs of a country or region. To make full and economical use of a central bibliographic data bank, automation seems inevitable. An automated data bank provides greater flexibility in the use and manipulation of records, wider search facilities with improved access to bibliographical data by multiple approaches, and greater ease in updating records. Cooperative contribution to and use of a central data bank avoid duplication of effort, decrease the need for original cataloguing and thus reduce processing costs over the whole system. Use of the system and its products tends to raise the quality of cataloguing and promote the standardization of input and output throughout the system. The cooperative pooling of information resources and skills and the constant improvements being made in technology stimulate the development of future applications as yet unknown.

Lest I be accused of eulogizing an automated centralized bibliographic data bank and being blinded by the sweep of its possibilities, I hasten to point out that a central data bank presents all the disadvantages of any large centralized system serving many types of clients; too much and too rigid standardization, the danger of overloading the system and causing subsequent delays, problems of backup and security and, especially, a kind of dehumanization which frightens staff and users and seems to detract from that most intimate relationship between the user and the book. We have to learn to live with a catalogue which is not always visible to the human eye and to develop a faith in the reality of digital data.

I believe that one of the chief dangers of the large bibliographical data bank is paradoxically the enormous range of possibilities that it provides. There is always a danger that if something is possible, someone will want to produce it regardless of whether it is necessary or even desirable. The computer is the world's largest producer of scrap paper and before any service is contemplated, one must take a hard look at both its utility and its cost.

III. Contents of the data bank, bibliographical records and their components.

The services that a centralized bibliographic data bank can provide depend upon the type and number of bibliographical data elements that are included in the record for each item. The AUCC report on library automation (1) states that elimination of some data elements reduces the cost of conversion of records to machine-readable form very little. I tend to disagree with this statement. Even if conversion is considered simply as the keyboarding of records to translate their characters to digital form, in a large file, of for example four million records, the addition of even one extra character per record would result in four million extra keystrokes. The necessity, with the technology presently available, of having to rekey all records is one of the major cost factors in the conversion of retrospective records. In studies of the Union Catalogue which I shall discuss later, we have found that it is necessary to reduce keyboarding to reduce costs.

The conversion of bibliographical records and their maintenance in machine files present problems beyond that of keyboarding. A manual file may need editing and revising before it can be converted. This will depend on the quality of the file and it is one of the major problems to be considered in conversion of the Union Catalogue which is completely lacking in standardization and is very uneven both in the quality of cataloguing and in the completeness of the records. Next bibliographical records must have content designators added to identify each element in the machine and to permit sophisticated processing. Editing and coding of records are very expensive. Certain bibliographical elements are more difficult to edit and code than others and require more highly trained staff to identify and differentiate various types of data. Machine formats such as MARC may include additional data codes for retrieval and statistical purposes, for example codes for language. These may be difficult for junior clerks to assign, especially without the book in hand. In all preparation, editing and coding, as well as keyboarding, of manual records for conversion to machine-readable form, the more bibliographical elements there are and the greater their complexity, the longer the preparation takes and consequently the more it costs.

The final cost factor related to bibliographical records and the number and size in characters of the data elements that compose them is machine storage. With the present hardware available, on-line machine storage is very expensive for massive files. A file of several million records will require several billion bytes of storage. Records of MARC-level detail have an average of 500 characters each. To provide a satisfactory location service in a union catalogue, records of 300 characters each would suffice. This represents a considerable saving in storage costs. I will be discussing this further in connection with the Union Catalogue, here I wish to point out that when dealing with a large file of several million records, each bibliographical element should be closely looked at from a cost benefit point of view. Editing, coding, keyboarding and storage costs are all related to the number of characters in the system, thus the number of bibliographical elements included in each record.

I have long been convinced that cataloguers are a race apart who have a stronger drive towards perfection than most ordinary mortals and as a long-time cataloguer only partially converted to systems librarian, I dare to suggest that there is a relationship between the desire for bibliographical perfection and the processing backlogs in libraries. We seem compelled to attempt to produce the longest, most complete and most accurate bibliographic record possible, for every item that comes into our libraries no matter how trivial, ephemeral or esoteric. Faced with the information explosion, this seeking after perfection is no longer a virtue but a temptation to which we cannot afford to succumb.

Maurice Taube has coined the phrase the "3 x 5 syndrome" (46). We all suffer from it in varying degrees. We cataloguers have created, under divine inspiration be it assured, set up and are now attempting to canonize the catalogue card. We have our sectarian differences, our books of the law, (Anglo-American, A.L.A.) our authorized version (Library of Congress), our ritual language (hanging indentions, try to explain that one to a systems analyst!), our hierarchies, (saints, popes, sovereigns, princes, noblemen and others) our Golden Rule (if there's a fire, save the shelflist, first). It is in face of all this that I must now become devil's advocate. It should, however, be remembered that the position of devil's advocate is just an attitude assumed for a temporary and special purpose. I may be just as convinced as you are that the Blessed Carta Catalogia Perfecta, hallowed by tradition and worshiped for generations, is worthy of canonization, but someone has to take on the unpleasant and thankless job of examining, to mix a metaphor, the other side of the coin.

Seriously, can we afford to go on thinking in terms of the 3 X 5 card only? The user of the catalogue is often lost sight of. Whereas the card catalogue and all its carefully prepared elements may seem the heighth of clarity and simplicity to the cataloguer, there is no real evidence that the catalogue user has found it so. For manual systems the 3 X 5 card is probably the most convenient way of organizing and updating bibliographical data, but with the new machine technology available, we need no longer be bound to one physical format. It was unfortunate that at the moment when the new technology became readily available, first, there appeared a new volume of cataloguing rules which paid no consideration whatsoever to new ways of cataloguing which might be more practical for a machine system and thus was largely obsolete on its publication, and secondly, the first great advance towards standardization for machine processing of bibliographical records, the MARC format, is strongly orientated towards the 3 X 5 card.

Records in MARC format are costly to prepare because they attempt to satisfy two systems, manual and machine, consequently instead of reducing the workload on the cataloguer, they increase it and so tend to raise the cost of cataloguing. Data elements which in a manual system can be easily identified and manipulated, must now be coded for machine processing. Extra data codes, making explicit what would be implicit to human intelligence, are added. Have some of these additional codes and data elements been added simply on the assumption that the computer may make some future use of them? Has anyone determined whether there is an actual need for this extra information?

Unfortunately we are, as Matthew Arnold said, "wandering between two worlds, one dead, the other powerless to be born". If we could use solely a machine system, there would be possible savings in the preparation of cataloguing data. For example, the concept of the main entry, which causes a lot of soul searching and hair tearing in every cataloguing department, is not necessary in a machine system. As long as all approaches are included, there is no need to label one as the main entry in a random access file. To find a bibliographical item, one approach is as good as another, and the catalogue user would agree; he does not always hit on the main entry. Is the main entry concept even necessary for printouts from a machine file? Items can still be arranged under authors and all works with which a particular author is connected will fall together, regardless of whether he is the main author, editor or illustrator, etc. What about a title entry for main entry? Is perhaps the title a more stable element of a book and less open to human manipulation? Libraries have been too long constrained by physical and external elements and too little by user needs. The dictionary card catalogue is not sacrosanct; it has very little flexibility and the average user does not understand how it is organized (47). In new methods of machine retrieval it is not necessary for the user to have a knowledge of catalogue record construction or file organization, although he may have to learn a searching technique (26). However, the computer can help in teaching him this. Existing bibliographical records are influenced by existing means of display, the card catalogue; future techniques must break away from these limitations.

Machine records have additional needs, content designators and extra codes for management information. These require extra intellectual work. Therefore, I believe, that we must compromise. If we must add more information to get a processable record for the machine system, let us drop some data from the 3 X 5 system, such as the main entry concept. Also let us examine each data element, code and content designator to see if it is really necessary. If we are not going to print a book catalogue, do the content designators need to make complicated distinctions for filing purposes? As for extra information codes, do we need them for information retrieval or merely for statistical purposes? If for the latter, B. C. Vickery has pointed out that we can get this type of information from sampling (48) and it is very easy to run a random sample against a machine-readable data bank.

Several projects today are based on an augmented or expanded catalogue which includes such extra data elements as tables of contents and abstracts or extra records for parts of books and journal articles, thus combining a catalogue and index. These are very exciting experiments, but can we afford this information in an on-line data bank?

I have discovered from experience that if you ask a group of librarians why they need various bibliographical elements, they will always find uses for them. However, meetings with professional catalogue makers and professional catalogue users are very useful and one can work out compromises. One of the approaches studied in connection with the Union Catalogue was a basic location service. I was able to work out with staff members the basic bibliographical elements required for a location service and to gather and rank in importance additional elements which would be very useful, but not essential. For example, it would be very convenient for lending libraries if the Union Catalogue included local call numbers for all locations of an item. If this information was forwarded with the interlibrary loan request, it would save another catalogue look-up. However, as items may have as many as 80 locations in some cases, this would be very costly in number of characters stored. Given a projected size for a machine-readable catalogue and the cost of producing it, it is possible to work out a unit cost for converting and storing one character. Used in conjunction with average lengths in characters of bibliographical data elements, this can provide a cost criteria for evaluating bibliographical data elements. Another point that should be considered in the choice of elements for inclusion in a data bank is whether the data is readily available elsewhere, in directories or in national or subject bibliographies for example. Authors' dates can be found in biographical sources, after all the cataloguer had to find them somewhere, however, authors' dates are also necessary for distinguishing between authors with the same name. It is this latter reason that is the valid one for including dates in the bibliographical records, not the first. The cost of preparing the data element should also be considered. Bibliographic history notes for example, often require extensive research by the cataloguer. When a bibliographical element is costly to prepare, difficult to code, and lengthy to keyboard and store, we should make sure that it is really essential.

If complete records of full MARC detail are included in a data bank, will all the elements be used? It is hard to predict future developments and requirements of data banks, but is it wise to add everything we can think of now, just in case we may need them in the future? Can we add other elements to the data bank at a later date if it becomes necessary? Can we start with a small record for present use and build it up, as services are increased? This is a very important point on which I would like some comment from this meeting. We do not want to have to go back to the book at a later date for more information, however, we may have more information stored off-line, historical tape files for example. If we build a data bank with reduced records, but in the future need more elements, how expensive is it to add more data from historical files? Can brief records be stored on-line and full detailed records off-line on tape or microfilm? How will this degrade a real-time system?

Is it possible to have a data bank with a mixture of records, some brief and some full, according either, to whether full data is available at the time of inclusion, or to some criteria such as full data for selected records only, for example current cataloguing or Canadian items? Does this present a compatibility problem? If content designators are simplified, the data bank must be processed at the lowest common denominator (40) but if certain data elements are missing in some of the records, does this effect overall processing?

Having raised so many questions on the inclusion of data elements, I must now admit that drastic limitations of bibliographic elements in the national data bank may well be an academic question. A central file which will be used by the whole library community will probably need records approaching full MARC detail, at least for current items. However, regional and local parts of a network may be able to reduce their data elements and consequently their storage costs. Even in the centralized data bank can we, as a Canadian library community, afford such things as centralized circulation records, local call numbers, abstracts and other data not normally found on the conventional catalogue card and which, consequently, we have done without up to now? The problem must be approached from a cost benefit and systems viewpoint. What is the cost of preparing, coding, keyboarding, processing and storing each element? What is its use? Who uses it and can the information be found elsewhere? Only then can a valid trade-off between user convenience and cost be worked out.

We must systematically find out what the catalogue user requires. Does he perhaps require data that we cataloguers have never even thought of? I believe a user study at the University of Chicago found users who would like books colour-coded, "That red book that I had last week". Farfetched? We will have to devise methods to collect information on catalogue use. Barbara Evans Markuson (34) has pointed out that while circulation information can be supplied as a simple by-product of automated circulation systems, this information is not sufficient for catalogue use research, as it does not include the uses made of the catalogue which did not result in an item being borrowed. It should also be remembered that the use librarians make of the catalogue is generally for bibliographic information, non-librarians use the catalogue for clues to books and their contents, that is to retrieve the physical items containing information (25).

We must examine the possibility of starting small and building up a centralized data bank as required, modularly. While we may be able to omit certain data elements, we probably should not skimp on contents designators for those elements which we include. Finally there are two attitudes that should be avoided, one, that a manual system or data bank should be computerized exactly as it stands, and two, that an existing system should be radically changed in order to simplify the chore of mechanizing it.

Experience as the editor of Canadiana has convinced me that you cannot be all things to all people, no matter how hard you try. It is like the father, the son and the donkey in AEsop's fable, every time you change something, there is someone to tell you that you were doing it better before, and if you don't change anything, that is not satisfactory either. To paraphrase P. T. Barnum, you can please all of the people some of the time and you can please some of the people all of the time, but you can't please all of the people all of the time. Sancta Carta Catalogia Perfecta ora pro nobis!

IV. The data bank and the library network.

The idea of a network is not new to libraries, libraries have formed networks for many years and they are certainly the largest existing information system in Canada. The resources sharing made possible by modern communication techniques is bringing about a democratization of information (1), minimizing the effect of distance on the information user and raising the level of what in modern jargon might be known as "informationally-disadvantaged" areas.

Networks may be set up in various configurations and with various nodes, international, national, regional and local (2). The design of the network may involve duplication of the data base to some degree. For example, the national bibliographical data bank may include all the book resources of the country, the regional nodes have data banks comprising regional union catalogues and also contain current catalogue records which they will retain for a certain period only and then destroy. Another alternative would be for regional nodes to be responsible for maintaining a subset of the national data bank, for example subsets by language or subject. In a Canadian network, the Quebec region might contain the data subset for French literature and history, the Atlantic region might have responsibility for oceanography.

The design of the network also depends on the size of the population to be served and on the geographical dispersion of that population. Multiplication of regional and intermediary nodes between the national and local levels involves costly duplication of parts of the data base and complicated switching and updating procedures. Reduction in the number of nodes may increase the problems of backups when segments of the system are down and may tend to produce traffic congestion.

Costs of networks depend on the services to be provided and on the size of the data bank required to support those services. Costs may be reduced by limiting the duplication in the system. For example, it is not necessary to provide every location for an item in every library in the system, representative locations spread evenly over the geographic area will suffice.

Transmission costs are a problem in a country of the geographical extent of Canada. However, it is hoped that new technologies afforded by microwave facilities and communications satellites may make it possible to implement a new system of charging for long distance communication, for example a flat rate for data bank users regardless of distance travelled.

Although Canada is a large country geographically, it has a relatively small population. Therefore might it be possible to start an automated bibliographical network with local libraries and other users going directly to a national data bank? As traffic and use increased, it would be easy to duplicate portions of the data bank in order to set up regional nodes. A new automated network could start with limited services, for example the transmission of machine-readable cataloguing data could be done in batch mode at first, magnetic tapes would be mailed to libraries. The system could be upgraded to on-line real-time capabilities at a later stage.

The problem of collecting and producing the information to form the data bank is a crucial one and is closely related to the problem of funding. Canada has no one single source of cataloguing data like the Library of Congress in the United States; a data base would have to be built up. This could be done with MARC and RECON tapes as they become available and with tapes from selected Canadian libraries. However, if their data was to be used as the basis of a national network, libraries who were converting their catalogues to machine-readable form would probably expect to be aided financially, and this raises the question of funding a network.

A bibliographic data bank network will require substantial funds for its development; this would represent a financial outlay more than any one institution could supply and would require cooperative action from the various levels of government supporting education and research. For example, the federal and provincial governments, in agreement with the universities, might make a special grant over a number of years for the development of a centralized bibliographic data bank and the establishment of a network. The funds could be administered by a committee who would have the task of deciding which libraries should be chosen to receive aid in converting their catalogues for inclusion in the national data bank. It would be important to avoid excessive duplication and to choose only data that would be of optimum value to a centralized system. It would not be feasible to aid every library wishing to convert its catalogue. Criteria for selection of contributing libraries could be the quantity and quality of collections and catalogues. The conversion of one large comprehensive file might be needed to form the basis of the data bank, then special collections could be added to broaden the base. Choice could be based on the quality of records, the data elements included, the use of machine formats and contents designators adhering to international standards, and the accuracy and completeness of cataloguing. Agreements for shared cataloguing could be arranged to keep the data bank current. Libraries, which under a rationalized national acquisitions program are given the responsibility for maintaining collections in certain subject fields, could also be given responsibility for contributing cataloguing for all items in their field not already found in the data base. Coordination of national acquisition and shared cataloguing programs would simplify arrangments for grants to maintain and organize the collections.

The establishment of a network will require a great deal of research and development. The cost of this will be more than one library or institution can support and will require a cooperative effort with pooling of funds and expertize from all network levels.

The funding of networks is magnified by the fact that the various nodes represent different levels of government, federal, provincial, and municipal, as well as private industry. This problem is surely not insoluble, but will require thoughtful and tactful handling.

Once a network is established, there is the question of operating costs and service charges to users. As users will vary widely in the amount and type of information and service they require from the system, the charges should bear some relation to value received. The Dainton Report (36) lays down the principle that bibliographical service should be based on cost recovery. If facilities are used free of charge, lack of financial restraints may lead to the cost exceeding the value of the information supplied and to requests being made unnecessarily. Dainton recommends that a reasonable charge be made according to services provided.

V. Standardization for bibliographical data banks.

Standardization can be of systems or of records. Standards necessary for bibliographical data banks are mostly for records, but networks may require some system standardization as well. Some degree of standardization is necessary for any pooling of bibliographic data, but it does place certain limitations on individual participating libraries who have their own internal constraints: staff, funds, size of their existing bibliographical files and the needs of their community of users (24). Standards which must be observed by participants in a network may vary; if a library is only a user of network data and not a supplier, it need only observe those standard procedures which enable it to get usable data from the system. Despite the initial problems which a library may have in converting to a standard, and despite the limitations which standards may place on custom service to its clientèle, standardization in general can benefit libraries and especially their users. School children can learn how to use standard bibliographical services and find the knowledge valid in all parts of the world adhering to the standard. Since automated data banks can generally provide more flexibility to individual users in satisfying their information needs, such as multiple approaches for retrieval and varied outputs, this may largely offset the problems which libraries may have in observing standardization.

Libraries in general seem to be accepting what they receive in the way of automated indexing and abstracting services; once it is clear that the cost factor in processing is now making it essential, they will have to accept standardization in other bibliographical areas. We can no longer each do our cataloguing, or even make our own changes to Library of Congress cards; the backlogs are mounting and the information needs are increasing. If our libraries do not satisfy information needs, some other institution, called a documentation center or an information facility, is going to do our work for us and put us out of business.

This paper will not discuss standards in detail, this will be done in other papers; it will simply raise questions concerning the necessity and variety of standards for data banks. Do automated systems require more standardization than manual systems and how does this effect cost? Will the savings and benefits which result from the use of a bibliographic data bank network offset any extra work involved in adapting and adhering to standards in order to participate and contribute to the network?

To what extent are cataloguing standards necessary in a data bank? I have already discussed the question of the main entry, what about standardization of the form of entry and of the bibliographical description of books? An automated system may be able to help in reconciling variations in author's names by the use of the various truncated and compression algorithms which are now being experimented with (33, 37, 41, 45). It is most probable, however, that these algorithms will result in search keys that are not unique for all items and this will cause problems for voluminous authors and subjects. However, compression codes should help in retrieving misspelled and garbled names. Another standard which was discussed at the IFLA meetings last year in Copenhagen was a standard bibliographical description, a kind of visual format, as opposed to a machine format, which, by observing a standard sequence of data elements and a standard punctuation for the bibliographical record, would assist in identifying data elements in records in languages unknown to the user and would help in format recognition programs.

I have not discussed subject retrieval in a centralized bibliographic data bank; it is a thorny question. Can we accept Dewey Decimal and Library of Congress Classification numbers as provided on MARC tapes for example, and how does this effect shelf arrangement in individual libraries? The use of subject headings in a bilingual country is a terrifying prospect; the expense and difficulty of developing sets of related headings in two languages would be enormous and it seems doubtful, if either subject headings or classification are specific enough for retrieval from massive files. Do we need standard guidelines for the depth of subject analysis and standard lists of descriptors for certain subjects?

Filing by computer is another problem awaiting solution. With an unfortunate timing similar to that of the Anglo-American Cataloguing Rules, a new edition of the A.L.A. Filing Rules appeared in 1968 geared to manual systems. If we are going to maintain on-line random access machine catalogues, do we need to go to the expense of research into machine filing? Can we profitably use the experience of other automated systems such as airline reservation systems and telephone directories, which are already handling large name files by machine?

Standards needed particularly for automation include machine formats with content designators, such as MARC II for monographs. Formats are being worked on for serials and technical reports. Compatibility and ease in processing one anothers' data also requires standards for machine codes, character sets, information codes such as language and standard catalogue date code, and a standard use of numbering systems for unique identification of records or of physical items, such as

Library of Congress Card Numbers, Standard Book Numbers and Standard Serial Numbers. Our study at the National Library has found these numbering systems to be an important factor in reducing costs of an automated Union Catalogue.

Do we also need standards for information retrieval, data base design, record organization and machine indexes? The Library of Congress has recognized the need for authority files for personal and corporate names to be adhered to by all contributors to shared cataloguing for the same data base. They will soon be issuing MARC Reference Control Information (2).

What standards are necessary for network users? Standard transmission codes and standard procedures for search of the data base would seem essential, international standard library codes for individual libraries for use in interlibrary loans may be desirable.

And finally, what about standards for library software? This is in the realm of system standardization and even if we are all using standard records are we going to process them in the same way in our individual libraries? How do variations in hardware configurations effect software package programs for operating routines? Is perhaps the farthest we can go at present in software standardization the creation of modular subroutines which can be used in many programs?

A great deal of research on standardization is in progress and more is needed. However, we can devise all the standards necessary and they will be useless unless libraries agree to use them. Libraries must be more willing to accept standards than they have been in the past. There will have to be individual sacrifices for the good of the total system. If the overall service is better, probably our more satisfied users won't even notice the changes.

VII. The Canadian Union Catalogue, a basic centralized data bank; study and proposals.

I would like to illustrate this paper on data banks by a discussion of the Canadian Union Catalogue. Before a definitive system can be designed for a Union Catalogue, a policy decision will have to be made on the the services that will be provided. Should the Union Catalogue continue to be basically a location service, or should it become a full bibliographic data bank capable of providing many services? By studying various alternative systems and their requirements, the National Library Feasibility Study is attempting to provide information on which this basic decision can be based. I would like to discuss briefly five alternatives and give some indication of their costs. I must stress that these alternatives are tentative proposals only, that costs are preliminary estimates and that the National Library is not in any way committed or confined to any of these suggestions.

Alternative I.

The first alternative is really just an analysis of the present system and its projection into the future. This projection is necessary in order to have a basis for comparison with other alternatives. According to this alternative, accessions to the Union Catalogue are filed and records for the same title are combined on one card giving all locations. This combination work is essential in order to reduce the physical size of the catalogue and to conserve valuable space. No full editing of records, current or retrospective, is done. A manual location service is provided as at present. The disadvantages of continuing in the present system are great; the problems of the manual catalogue are not solved, the catalogue will become more cumbersome, and interfiling and location work consequently more difficult. The cost of the location service will keep on increasing in a geometric progression and requirements for staff and space will continue to increase. The manual system will not be capable of improvement or of expansion into additional services. Graphs 1 and 2 show the growing work load in accessions and in location requests.

ALTERNATIVE I - Present system of the Union Catalogue, projections

	1969-70	1974-75
Accessions to the Union Catalogue	1,212,000	2,200,000
Unit cost per accession	$0.17	$0.19
Location requests	80,000	102,000
Unit cost per location request	$2.91	$4.82
Staff required, maintenance (accessions)	28	45
Staff required, locations	26	42
Staff required, total	54	87
Maintenance cost	$201,000	$421,000
Location service cost	$232,000	$490,000
Total cost of Union Catalogue	$433,000	$911,000

TABLE 1

Alternative II.

The second alternative considered is an improved manual system. This consists of fully editing the entire retrospective catalogue and then keeping the editing of accessions current. The full editing of the Union Catalogue is an enormous undertaking. By 1974-75 the catalogue will contain approximately 3 million titles and a recently conducted organization and methods study of the catalogue estimates that 180 man-years (58 librarian man-years and 122 clerical man-years) would be required to edit these 3 million titles. If we assume that this editing could be completed by 1973-74, then in 1974-75 it would be necessary to increase the staff, projected for that year under the present system, by 16 man-years to continue to keep the catalogue edited. The great advantage of editing the catalogue is that it would decrease the cost of the location service by one third to one half of the cost of the present system and it would also speed up the service. However, the service from the Union Catalogue would still be limited to locations and the system would still be manual. The total cost of full editing over a period of four years would be $1,555,000. Staff would continue to increase in order to maintain the edited Catalogue.

Alternative III.

The third alternative studied was the automation of the present system, including the full editing of the catalogue, its conversion to machine-readable form, and the processing of accessions and location requests by computer. For this study we assumed that records would have an average of 314 characters each and would contain bibliographical data elements that could provide an improved location service. Records would contain author, full title, edition statement, imprint and paging. Multiple approaches would be possible by other authors and titles connected with a work and by series. The records would also contain additional data codes that could provide management information on the make-up of Canadian library collections, for example break-downs by language, country of origin, date, type and form of material or by subject, analysed by Library of Congress and Dewey Decimal Classification numbers. Addition of accessions and retrieval would be possible by Library of Congress Card Numbers and Standard Book Numbers. Location codes would of course be included. A Union Catalogue with bibliographical records of this type we might call an augmented location service with provision for management information. The advantages of this type of catalogue over a manual one are substantial. The catalogue could be updated very quickly, the location service would be very fast, current holdings would be up-to-date, management information would assist in developing and maintaining a national acquisitions policy for Canada, libraries could be on-line to the system and do their own querying of it, and lists and bibliographies could be produced on demand. The disadvantage is the high cost. In addition to the cost for full editing of the records ($1,555,000), there is the cost of programming ($38,000) and the cost of conversion of the records. To have the system in operation by 1974-75, a total number of 2,658,000 titles would have to be converted at a cost of $2,867,000 or $1.08 per record. However, the yearly operating cost of this automated system, once it is implemented, would be less than either of the first two manual alternatives.

Alternative IV.

The fourth alternative considered was a full bibliographic data bank. Each record would contain all the data elements included in the MARC format plus Canadian library holdings. In order to circumvent the high cost of manual editing and of conversion, this alternative would create a data bank by building up a data base of available machine-readable records. This data base would be formed of all available MARC and RECON tapes, selected tapes from Canadian and possibly from American university libraries and tapes from the National Library's own output, original cataloguing and Canadiana. It is assumed that by 1973-74, a data base could be formed to which we could begin to add current accessions to the Union Catalogue. The manual Union Catalogue would at this point cease to grow. In the following year, we estimate that the data base would contain sufficient retrospective records that we could start trying to match data from the manual Union Catalogue to records already in the data bank and adding the location to matched records. The retrospective records from the Union Catalogue would not have to be edited; they would simply be treated exactly like other current accessions to the data bank. An attempt would be made to match the records by Library of Congress Card Number or by Standard Book Number, and failing this by author and title. This matching would be done by an on-line CRT terminal. A minimum of data would need to be keyed in to seek a match. Records that did not match would be replaced in the manual Union Catalogue. After the entire manual catalogue, from A to Z, had been matched against the data bank once, the remainder would be matched again, as considerable time would have elapsed and the data base would have increased in size and have broadened appreciably, for example more RECON records would have become available and have been added. The residue of unmatched records left from this second matching would be edited and keyboarded for entry into the automated data bank. We estimate that given a sufficient basic data base from MARC and RECON tapes and retrospective tapes from other libraries, by 1974-75, only 5% or 119,000 titles of the 2,658,000 titles in the manual Union Catalogue could not be matched into the data bank. Only this remainder would have to be fully edited and keyboarded at a cost of $232,000 as compared with $2,867,000 for conversion in Alternative III, plus $1,555,000 for full editing in Alternative III.

The advantages to the Canadian library community of this full bibliographical data bank would be enormous, for it would make possible most of the services which I discussed at the beginning of this paper. The bank would contain records of MARC format detail for all items and would include all MARC and RECON records whether or not these titles were held by Canadian libraries. By 1980, Alternative III, the Augmented Location Service would contain an estimated 4.7 million titles for records held in Canada. This bibliographic data bank, Alternative IV, would have by 1980, an estimated 8.7 million records, regardless of whether they were held by Canadian libraries or not. However, the operating expense would be very high because of the high cost of on-line machine storage.

There are several ways in which storage costs could be reduced. Records for which no Canadian location had been received over a certain period, for example three years, could be deleted from the system. Records of a certain age for which current cataloguing data were unlikely to be required by the majority of libraries could be reduced to the 314 character size records discussed under the third alternative. All records after a certain time could be written out on tape and only records of 314 characters stored on-line. However, it is interesting to note that the total cumulative costs to 1980 (see Table 3) for this full bibliographic data bank are lower than the cumulative costs for the augmented location service, Alternative III because of the high costs of full editing and complete keyboarding for conversion which are largely avoided in this fourth alternative by the method of matching the manual Union Catalogue against a machine-readable data base.

Alternative V.

A fifth alternative attempts to combine the advantages of the third and fourth alternatives. It provides an augmented location service like the third alternative, but arrives at this by using the data base method of converting the retrospective Union Catalogue as in the fourth alternative. This avoids the high cost of editing and keyboarding the old catalogue. The data base would be formed as in the fourth alternative from MARC, RECON and other tapes, but the records would be reduced to 314 characters each to decrease storage requirements. After the old manual catalogue had been completely matched against the data base, then all records in the data base without a Canadian location would be removed from the system. If an augmented location service is decided upon, this is the least expensive method of arriving at it. The full editing and keyboarding of the present Union Catalogue for conversion to machine-readable form no longer seems to be economically feasible. Match conversion against a data base would be possible.

The following table gives a comparison of some of the parameters of an augmented location service and a full bibliographical data bank.

Year	Augmented Location Service (Alternative V.)				Full Biliographical Data Bank (Alternative IV)			
	fast disk	slow disk	hardware cost (yearly)	total cost (yearly)	fast disk	slow disk	hardware cost (yearly)	total cost (Yearly)
1972-73	1	2	386,000	1,133,000	1	3	503,000	1,250,000
1973-74	1	3	515,000	945,000	1	4	633,000	1,062,000
1974-75	1	3	515,000	1,020,000	1	5	750,000	1,255,000
1975-76	1	3	518,000	820,000	2	7	1,066,000	1,368,000
1976-77	1	3	520,000	783,000	2	8	1,184,000	1,447,000
1977-78	1	3	522,000	826,000	2	9	1,304,000	1,608,000
1978-79	2	4	717,000	1,056,000	2	10	1,421,000	1,760,000
1979-80	2	4	717,000	1,083,000	3	11	1,615,000	1,980,000

It is assumed that fast disks would be used to store indexes to the Union Catalogue (author/title, Library of Congress Card Number and Standard Book Number). They could hold approximately 200,000,000 bytes and the Canadian rental is approximately $6,500 per month.
Slow disks would hold the Union Catalogue records. They could hold approximately 400,000,000 bytes and the Canadian rental is approximately $9,800 per month.

TABLE 2

TABLE 3, following, gives the cumulated costs from 1970-71 to 1979-80 for the five alternatives I have described. Graphs 3 and 4 show cost comparisons for the five alternatives. These alternatives are:

Alternative I. Present manual system of the Union Catalogue, location service only.
Alternative II. An improved manual system, with a fully edited Union Catalogue, location service only.
Alternative III. An automated augmented location service, with management information, and facilities to produce reports and bibliographies. The manual Union Catalogue would be fully edited and converted. System would be on-line.
Alternative IV. An automated full bibliographic data bank, on-line system with a wide variety of services possible. Retrospective conversion done by means of matching against a data base.
Alternative V. An augmented location service, as in Alternative III, but retrospective conversion is done by means of matching against a data base as in Alternative IV.

TABLE 3. Successive Cumulated cost, 1970-71 to 1979-80, for Alternatives I to V. (See Graph 3)

	Alternatives				
Year	I Present System	II Fully Edited Manual System	III Automated Augmented Location Service (314 characters per record)	IV Fully Automated Bibliographic Data Bank (500 Char./Record)	V Automated Augmented Location Service by means of a Data Base (314 Char./Record)
1970-71	$ 521,000	$ 869,000	$ 869,000	$ 521,000	$ 521,000
1971-72	1,145,000	1,832,000	1,913,000	1,226,000	1,226,000
1972-73	1,871,000	2,900,000	4,756,000	2,477,000	2,359,000
1973-74	2,607,000	4,047,000	7,726,000	3,539,000	3,305,000
1974-75	3,608,000	4,953,000	8,454,000	4,795,000	4,326,000
1975-76	4,613,000	5,948,000	9,317,000	6,163,000	5,147,000
1976-77	5,722,000	7,044,000	10,222,000	7,610,000	5,930,000
1977-78	6,944,000	8,249,000	11,168,000	9,218,000	6,756,000
1978-79	8,292,000	9,574,000	12,350,000	10,978,000	7,813,000
1979-80	9,780,000	11,032,000	13,588,000	12,959,000	8,896,000

The Feasibility Study is also considering the alternative of publishing the Union Catalogue either in book form or on microfilm. This would reduce the high cost of on-line machine storage. Locations could be found immediately by libraries having catalogues sets or microfilms in their possession. It is estimated that publication of the Union Catalogue would reduce by 75% the location requests handled by the National Library. However, it would not provide an on-line data bank system, except possibly for current material maintained in an on-line system between the publication of catalogue supplements. Retrospective data in machine-readable form could be stored on tape.

I would like to describe briefly a tentative operating system for an automated Union Catalogue. This system, once the machine-readable records were converted and stored on-line, would be identical for the third, fourth and fifth alternatives described above. The bibliographical records would be stored on massive random access storage devices, probably large scale magnetic disks (Bryant disks, for example, have a capacity of 400,000,000 bytes). Indexes to the records, which would be stored on smaller faster disks (for example, the IBM 2314 with a capacity of over 200,000,000 bytes) would provide fast approaches by author and title, by Library of Congress Card Numbers and by Standard Book Numbers.

This operating system would be a combination of batch and on-line processing. Accessions to the Catalogue could be received from libraries in either visual or machine-readable form. Machine-readable accessions, in standard format, would be batch-processed against the data bank (see Flowchart no. 1). The program, after translating and converting the tapes to the Union Catalogue character codes and format, would first attempt to match an accession to records already in the data bank, by Library of Congress Card Number or by Standard Book Number. Failing this, matches would be attempted by author and title and other data elements necessary to identify a unique record. Matched records would have the new location added, unmatched records would be printed out for manual editing.

Printed accessions would be matched against the Union Catalogue data bank on-line (see Flowchart no. 2). An operator at a CRT terminal would key in from each accession slip the Library of Congress Card or Standard Book Number, if present. A match, if any, would be displayed on the screen for visual verification, and if the match was valid, the new location would be added. If a match could not be made by number, the author and title would be keyed in and if necessary, enough additional bibliographical elements, such as edition and imprint, to make a unique match or to establish that the record was not already in the data bank. Matched records would only need to have the new location keyed in at the terminal. This method of adding accessions would keep keystrokes to a minimum and we are hopeful that in the future it will be possible to match 85 to 90% of accessions by Library of Congress Card or Standard Book Numbers. CRT terminals are suggested as input devices in this system because they can display records faster than on-line typewriter terminals.

Non-matched accessions from both the batch and the on-line processes would go to an editor for verifying and coding, if necessary (see Flowchart no. 3). The edited records would be keyboarded, batch processed and prooflisted. Verified records would then be added to the data bank by another batch program. Since this system assumes that MARC and RECON tapes would be added to the data bank as soon as they were available, it would be hoped to keep to editing of non-matched records to a minimum. Most new titles would be added to the system for the first time by the MARC tapes.

Inquiries to the data bank would be partly processed on-line (see Flowchart no. 4). Libraries could have their own terminals and query the data bank from remote locations. Other inquiries would be received by the National Library by mail or telephone. These would be searched by an operator at a CRT terminal who would key-in a minimum of data to establish a search code. For example, if a Library of Congress Card Number or Standard Book Number was available, this would be tried first, then author, title, and other elements. The principle would be to reduce the keying as much as possible, but still to take advantage of human skill in manipulating data and in trying other approaches when difficult searches warrant it. Telex and TWX inquiries could go directly to the computer and be processed automatically; the record or location, as required, could be transmitted directly back to the inquiring library without human intervention. Unanswered telex inquiries could be printed out for on-line operator-assisted searching (see Flowchart no. 5).

This, in brief, is a proposal for adding accessions and answering inquiries to an automated Union Catalogue data bank. Depending on the services to be provided, location or full bibliographical services, other programs would have to be devised. A parametrically fed report program could be used to produce various statistical and management information reports and special bibliographies from the data bank.

The problems of converting the Union Catalogue to an automated data bank are considerable. Although the building and use of a data base could drastically reduce the problem of editing records, both retrospective and prospective, there would be a certain number that need additional editorial work. If accession records supplied to the catalogue are incomplete, it is impossible for National Library staff, without the book in hand, to supply what is missing; we cannot build bricks without straw or invent bibliographical details. It might be necessary in these cases to ruthlessly reject and discard incomplete and garbled accessions which do not meet a minimum standard. Alternatively, the record could be added despite missing data elements in the hope that these elements would be supplied later by another library.

During the creation of a data bank, it would be necessary to use two systems for a time, the automated data bank and the part of the manual catalogue which was not yet converted or matched in. This kind of inconvenience, however, is practically unavoidable and to be expected. Changeover should be able to be effected with a minimum of the records being inaccessible at any one time. Conversion to an automated system could be done modularly, beginning with an automated location service and expanding to provision of other services by degrees.

VII. Steps towards realization.

Happily there is beginning to be strong agreement among the library community that Canada does need an automated centralized bibliographic data bank. Support by the Association of Universities and Colleges of Canada and the Committee of Presidents of Universities of Ontario is encouraging. However there are a great many obstacles to be overcome. The project is beset by financial and technical restraints. Financial problems include the funding of a network that will cross administrative, governmental and hierarchical lines. Technical problems include the need for cheaper mass storage devices. It is hoped that fourth generation equipment will provide new and inexpensive mass storage with improved accessing and indexing capabilities. Software, especially for satisfactory methods of information retrieval, lags behind hardware development. The need foran adequate in-depth subject approach for massive files is one which must be tackled. Minimum standards will have to be set and adhered to. While we seek perfection we must concentrate on the art of the possible. International networks based on centralized data banks are going to be a reality. If each country tries to provide for the majority of its bibliographical data needs in its centralized bank and each has access to other national networks, surely there is hope that worldwide bibliographical data can be controlled and shared.

I would like to end by making a few practical suggestions on what we can all do now to work towards a Canadian bibliographic data bank.

1. Try to break down barriers between librarians and systems people, keep an open mind, listen to new approaches and try to relate costs and needs. Be ruthless about traditional bibliographical details for which you cannot discover a truly practical use by a reasonable number of people.

2. Help to work towards standards and when a standard has been agreed upon, use it, even at the cost of some sacrifice and inconvenience by your own library.

3. Start putting Library of Congress Card Numbers and Standard Book Numbers on your catalogue records; you can start this today.

4. Let the National Library and other interested national and regional bodies know how you see the requirements of an automated data bank, what contribution you can make, what your essential needs are, and finally, in order of precedence, the frills you would like added.

5. Give strong support to the idea of cooperative funding from the entire Canadian research and library community and all levels of government for a centralized bibliographical network.

In keeping with the quasi-religious tone which seems to keep reappearing in this paper, I have ended by preaching a crusade. However, to quote Oscar Wilde once again, "on an occasion of this kind, it becomes more than a moral duty to speak one's mind. It becomes a pleasure."

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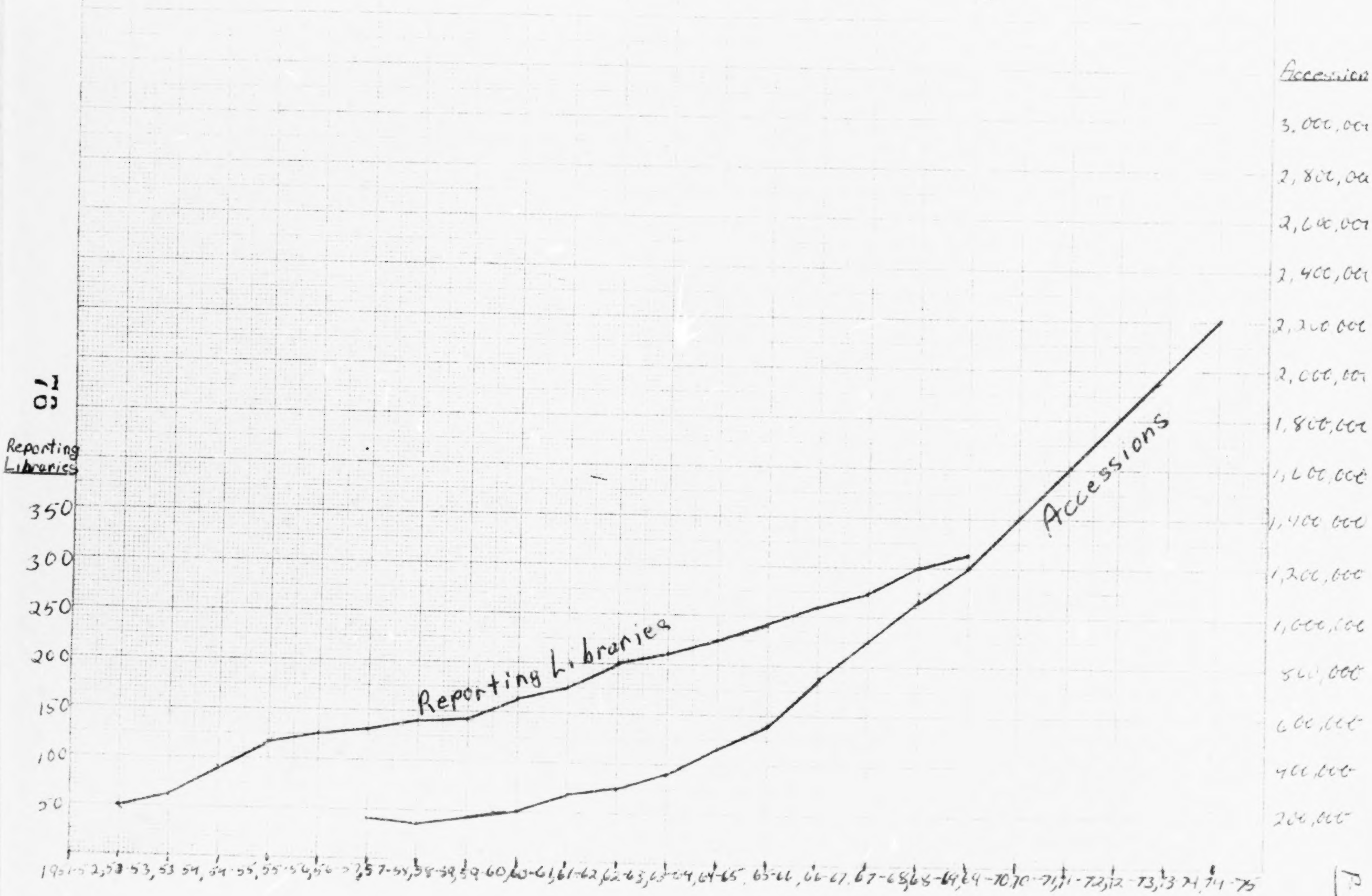
Graph I. Growing Work Load - Accessions and Reporting Libraries



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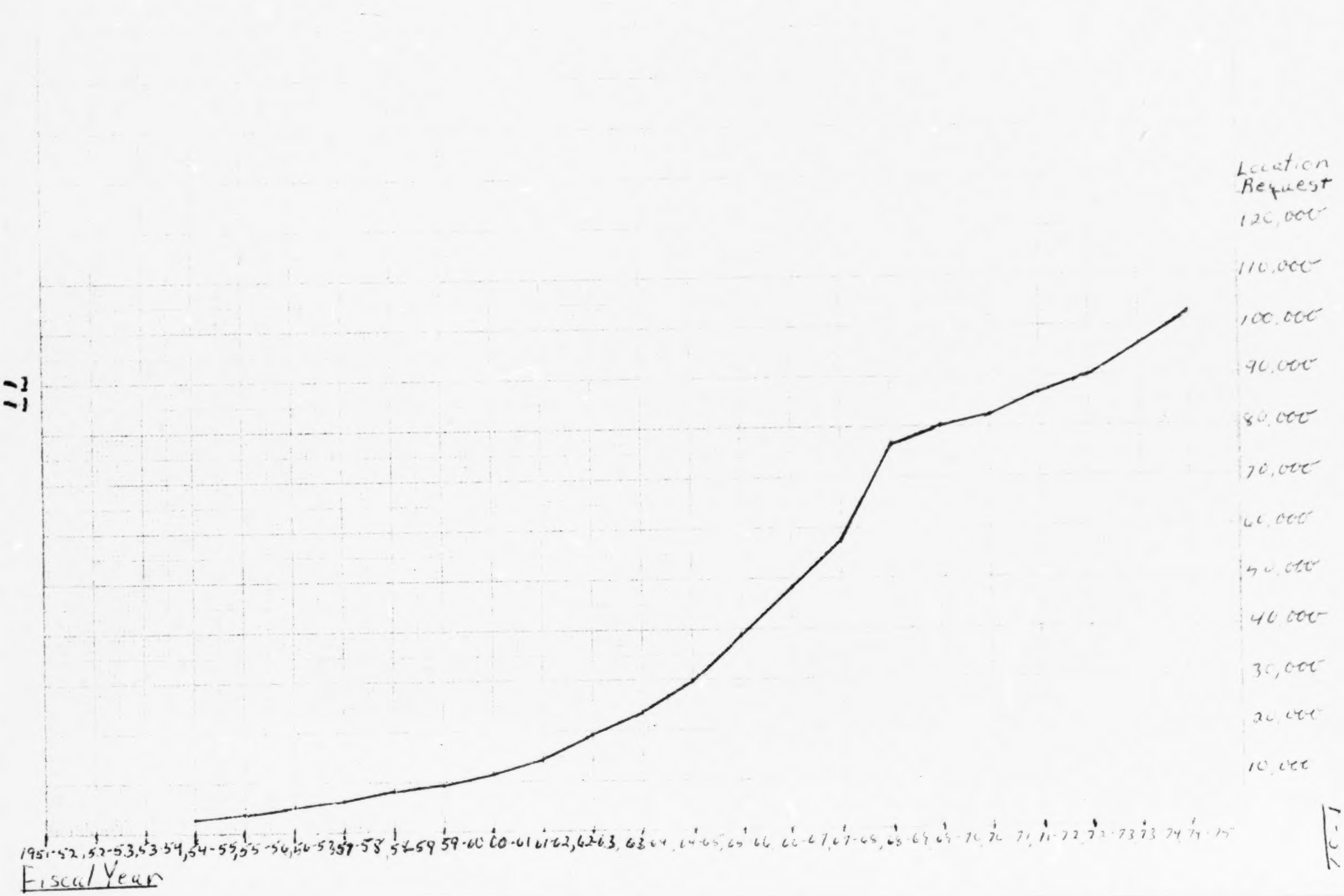
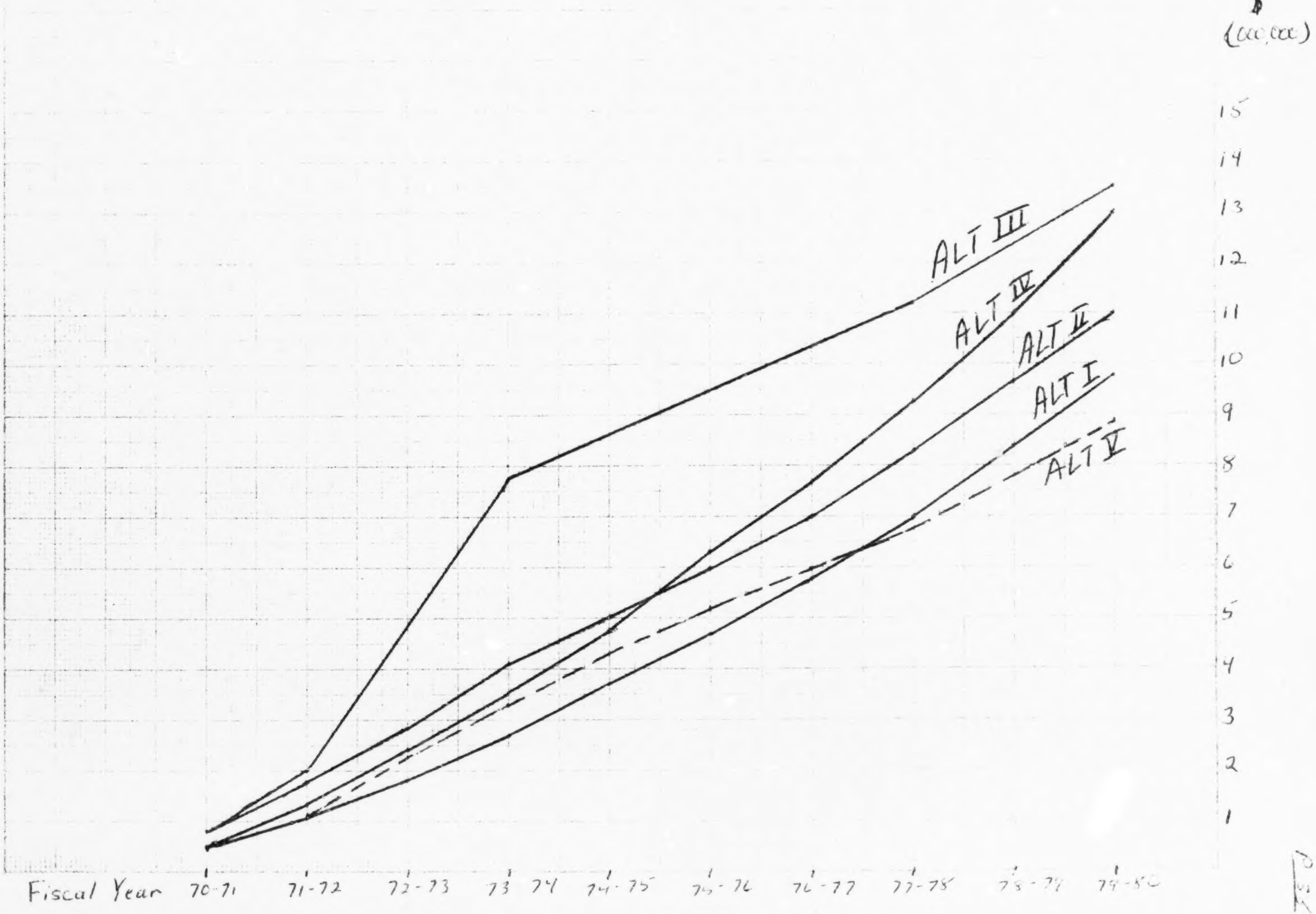
Graph 2 Growing Work Load - Location Requests



Graph 3. Comparison of Cumulated Costs, 1970-71 to 1979, For Alternatives I to V



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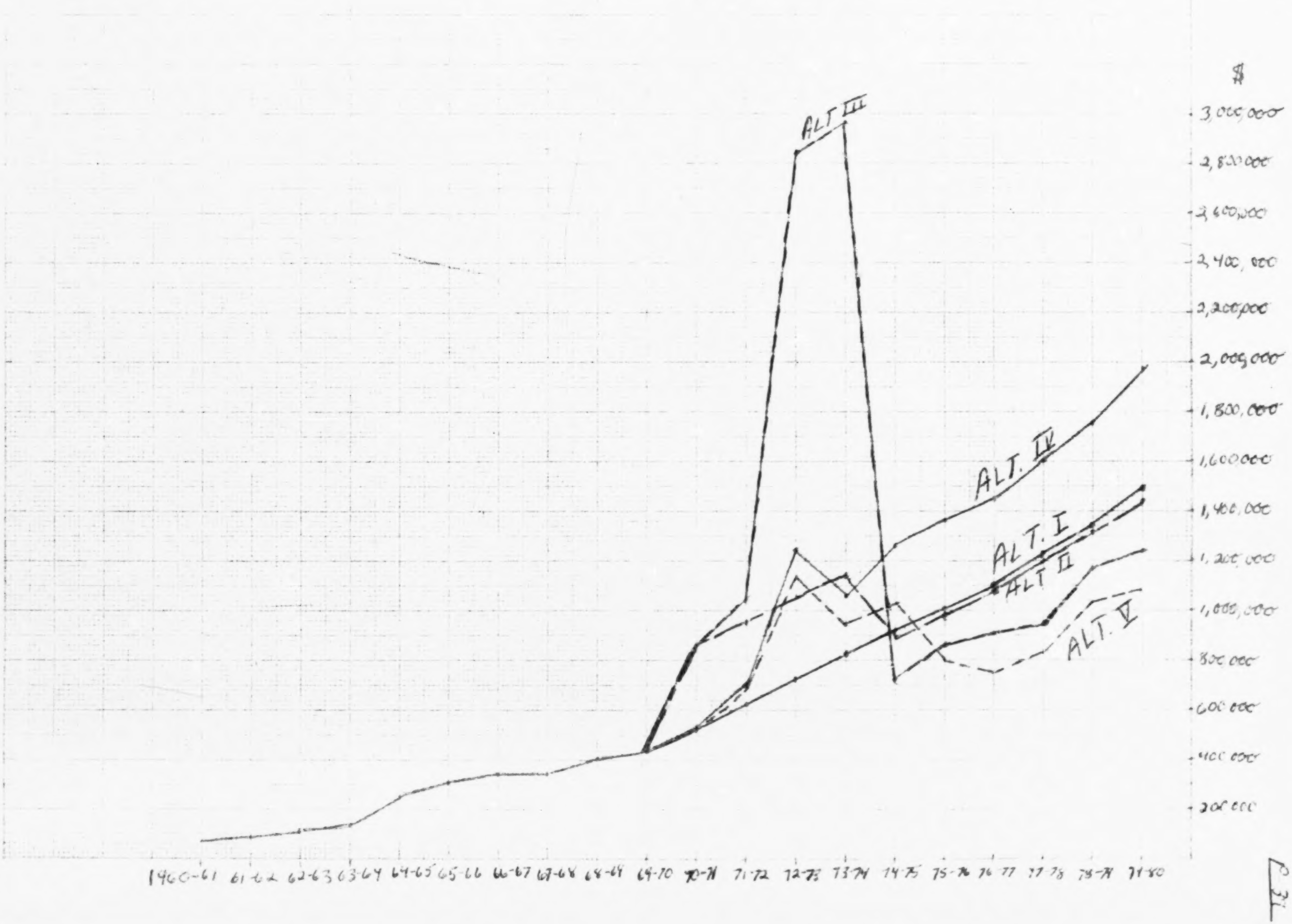
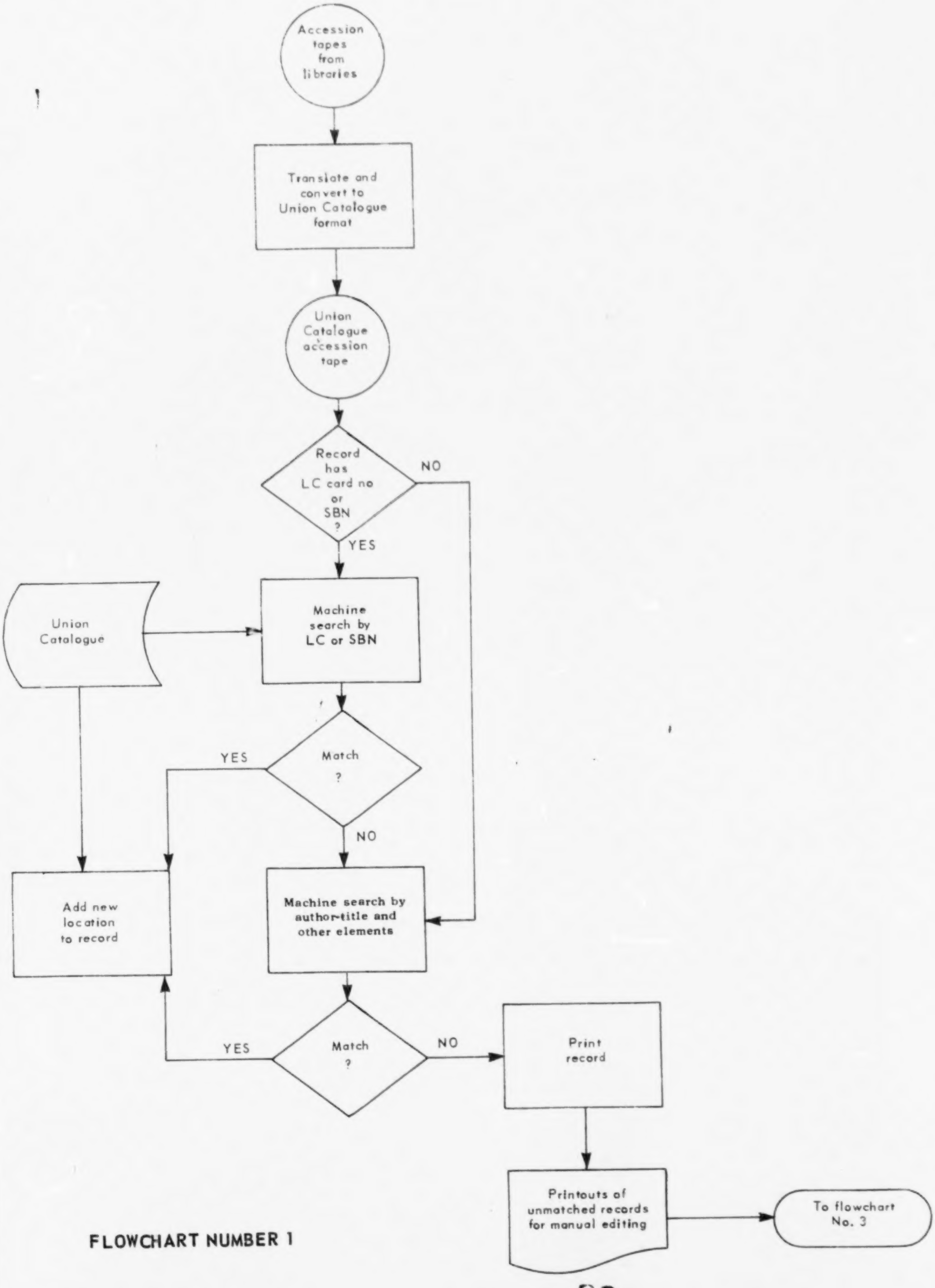


GRAPH 4. Comparison in cost of Alternative V with First Four Basic Alternatives

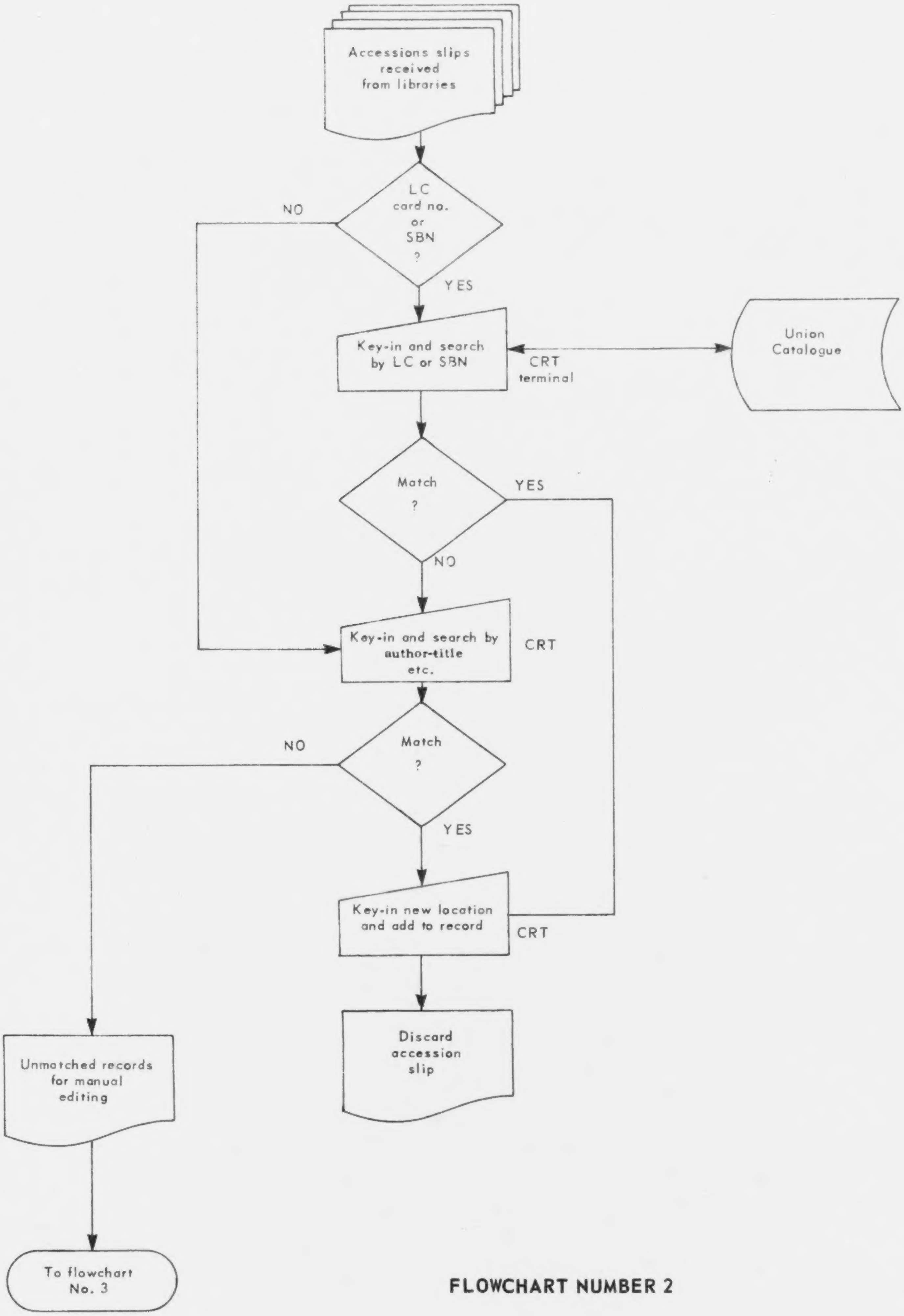
P 31

MATCHING OF MACHINE-READABLE ACCESSIONS TO THE UNION CATALOGUE – Batch process


Accession tapes from libraries
Translate and convert to Union Catalogue format
Union Catalogue accession tape
Record has LC card no or SBN ?
NO
YES
Union Catalogue
Machine search by LC or SBN
YES
Match ?
NO
Add new location to record
Machine search by author-title and other elements
YES
Match ?
NO
Print record
Printouts of unmatched records for manual editing
To flowchart No. 3

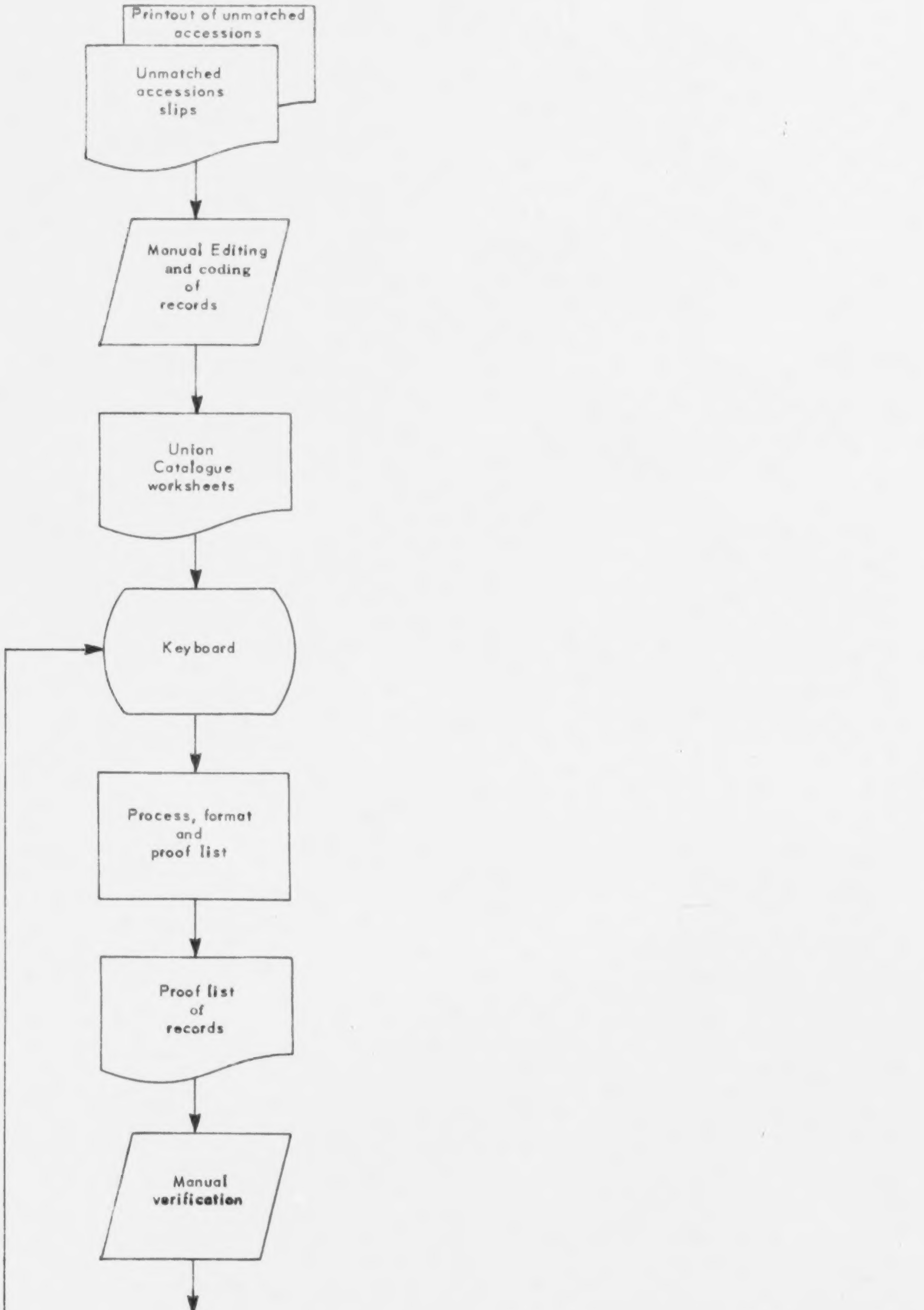
FLOWCHART NUMBER 1

MATCHING OF PRINTED ACCESSIONS TO THE UNION CATALOGUE


Accessions slips received from libraries
LC card no. or SBN ?
NO
YES
Key-in and search by LC or SBN
CRT terminal
Union Catalogue
Match ?
YES
NO
Key-in and search by author-title etc.
CRT
Match ?
NO
YES
Key-in new location and add to record
CRT
Discard accession slip
Unmatched records for manual editing
To flowchart No. 3

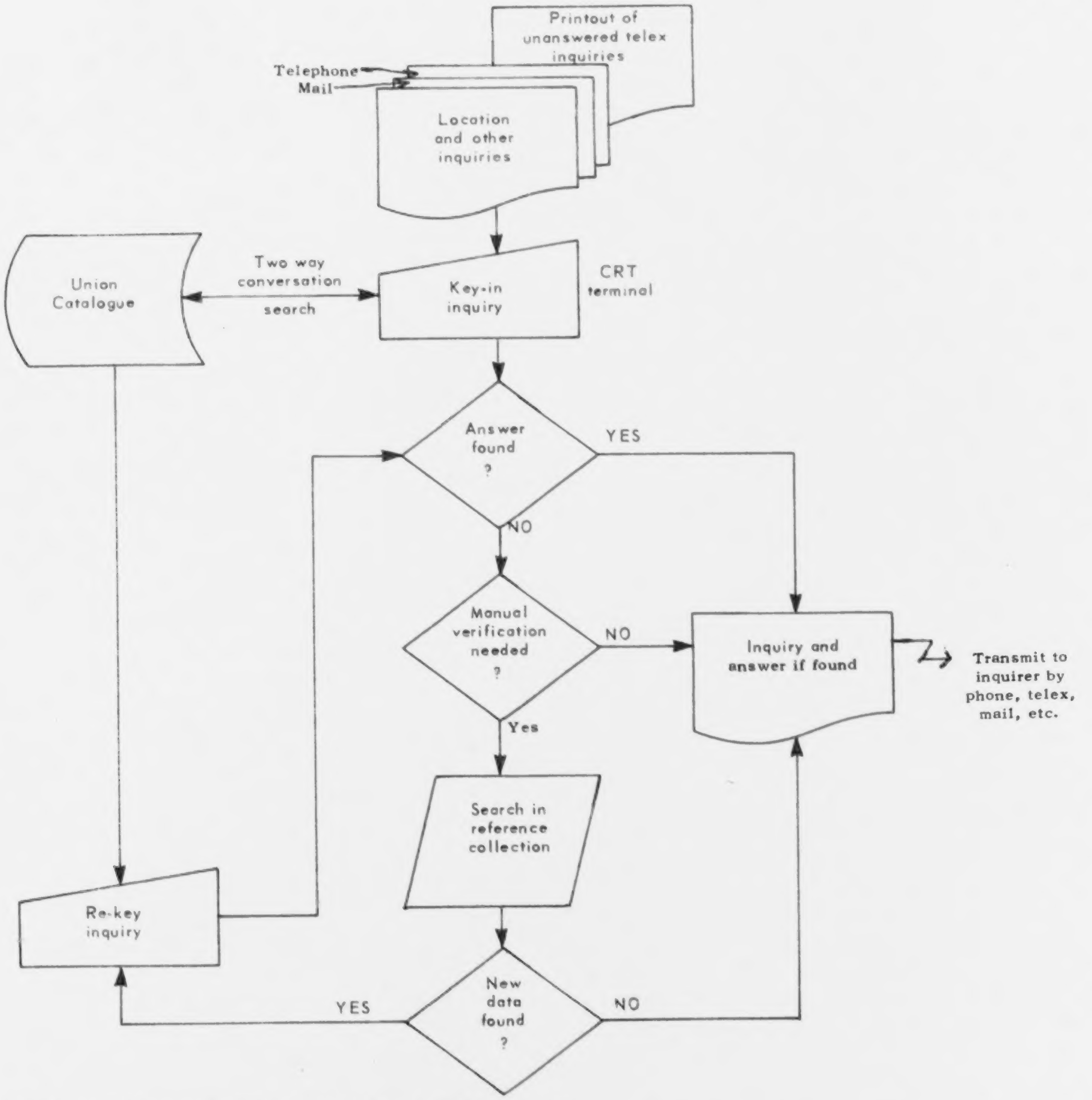
FLOWCHART NUMBER 2

EDITING AND PROCESSING OF NON-MATCHED RECORDS TO THE UNION CATALOGUE


Printout of unmatched accessions
Unmatched accessions slips
Manual Editing and coding of records
Union Catalogue worksheets
Keyboard
Process, format and proof list
Proof list of records
Manual verification
Errors ?
YES
NO
New accessions tape
Format, create indexes add records to Union Catalogue
Union Catalogue

FLOWCHART NUMBER 3

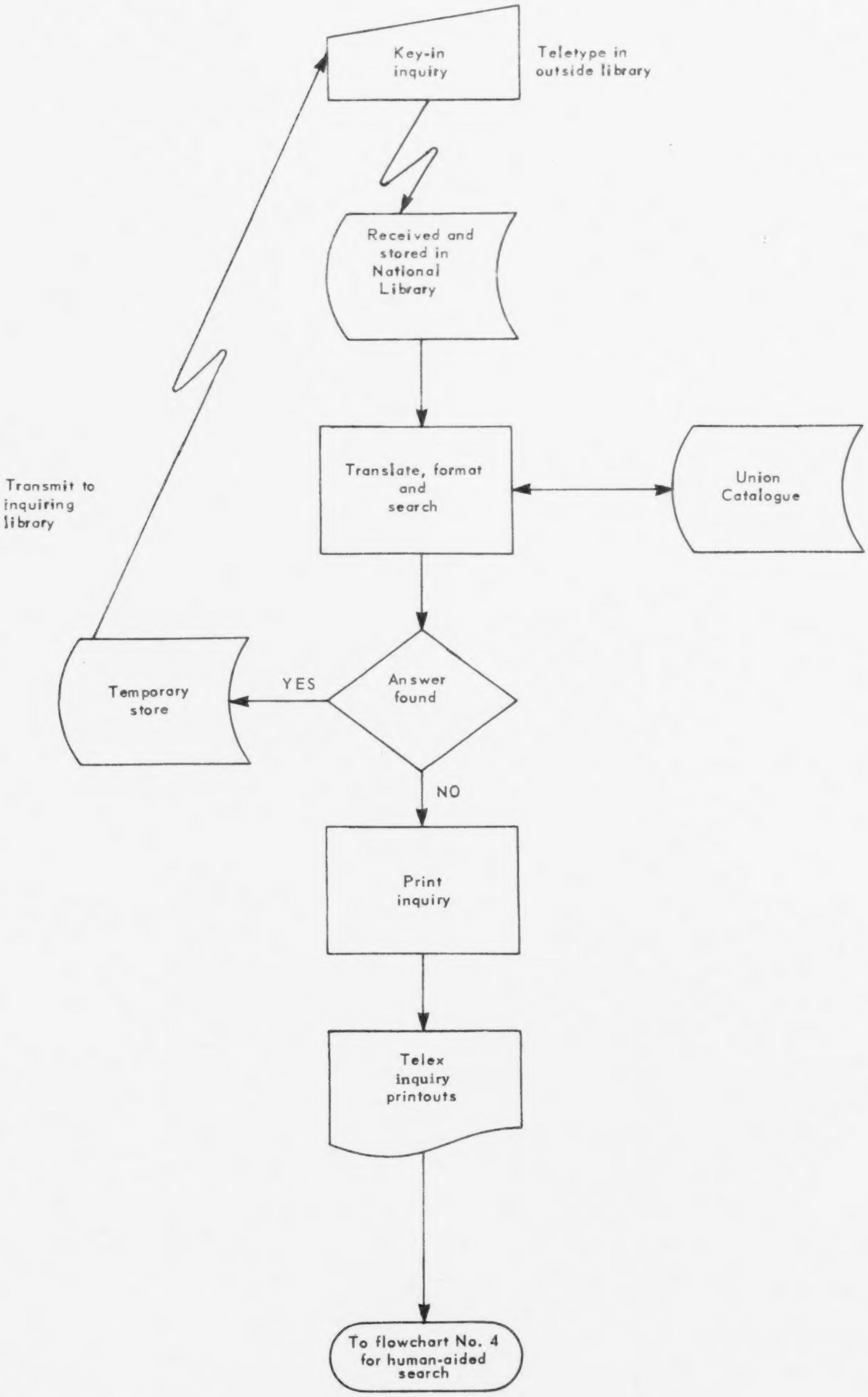
INQUIRIES TO THE UNION CATALOGUE – ON-LINE, CONVERSATIONAL


Printout of unanswered telex inquiries
Telephone
Mail
Location and other inquiries
Union Catalogue
Two way conversation
search
Key-in inquiry
CRT terminal
Answer found ?
YES
NO
Manual verification needed ?
NO
Yes
Inquiry and answer if found
Transmit to inquirer by phone, telex, mail, etc.
Search in reference collection
Re-key inquiry
New data found ?
YES
NO

NOTE: Libraries may have on-line terminals and perform this type of search from remote location.

FLOWCHART NUMBER 4

UNION CATALOGUE – DIRECT TELEX INQUIRIES TO DATA BANK


Key-in inquiry
Teletype in outside library
Received and stored in National Library
Translate, format and search
Union Catalogue
Transmit to inquiring library
Temporary store
YES
Answer found
NO
Print inquiry
Telex inquiry printouts
To flowchart No. 4 for human-aided search

FLOWCHART NUMBER 5

BIBLIOGRAPHY

1. Association of Universities and Colleges of Canada. Committee on Library Automation. Standardization in Canadian university libraries; an approach and a proposal. CACUL Newsletter, v. 2, no. 3, March 1970, p. 307-390.

2. Avram, Henriette D. Bibliographic and technical problems in implementing a national library network. 1969 - pre-publication.

3. Avram, Henriette D. ed. The MARC pilot project; final report on a project sponsored by the Council on Library Resources. Washington, Library of Congress, 1968.

4. Avram, Henriette D., Ruth S. Freitag and Kay D. Guiles. A proposed format for a standardized machine-readable catalog record. ISS planning memorandum, no. 3, Washington, Library of Congress, 1965. - Supplement, number 1, October 20, 1965.

5. Becker, Joseph. "Communications networks for libraries." Wilson Library Bulletin, Dec. 1966, p. 383-387.

6. Becker, Joseph and Wallace C. Olsen. "Information networks." Annual Review of Information Science and Technology, v. 3, 1968, p. 289-327.

7. Becker, Joseph. "Information networks prospects in the United States." Library Trends, Jan. 1969, p. 306-317.

8. Becker, Joseph. "Telecommunication primer" Journal of Library Automation, v. 2, no. 3, Sept. 1969, p. 148-156.

9. Bierman, Kenneth John and Betty Jean Blue. "Processing of MARC tapes for cooperative use." Journal of Library Automation, v.3, no. 1, March 1970, p. 36-64.

10. Brown, Peter. Some approaches to the concept of a 'national catalogue'. In no. 14 below, p. 130-134.

11. Brummel, L. Union catalogues; their problems and organization. Paris, UNESCO, 1956.

12. Conference on Libraries and Automation, Airlie Foundation, 1963. Libraries and automation; proceedings. Edited by Barbara Evans Markuson. Washington, Library of Congress, 1964.

13. Cox, Nigel S. M. The computer and the library; the role of the computer in the organization and handling of information in libraries. Hamden, Conn., Archon Books, 1967.

14. Cox, Nigel S. M. and Michael W. Grose, eds. Organization and handling of bibliographical records by computer. Newcastle - upon - Tyne, Oriel Press, 1967.

15. Cuadra, Carlos A. ed. Annual review of information science and technology. v.3, 1968. Chicago, American Society for information science, 1968.

16. Curran, Ann T. and Henriette D. Avram. The indentification of data elements in bibliographic records. Final report of the Special Project on Data Elements for the Subcommittee on Machine Input Records (SC-2) of the Sectional Committee on Library Work and Documentation (Z-39) of the United States of American Standards Institute. 1967.

17. Dammers, H. F. "Integrated information processing and the case for a national network." Information Storage and Retrieval, v. 4, June 1968, p. 113-131.

18. Downs, Robert B. Union catalogues in the United States. Chicago, American Library Association, 1942.

19. Duggan, Maryann. "Library network analysis and planning (LIB-NAT)" Journal of Library Automation, v. 2, no. 3, Sept. 1969, p. 157-175.

20. Funk, Charles. "Automated union catalog of the libraries in Connecticut." LARC Reports, no. 32, 1969.

21. Harrison, J. and P. Laslett. eds. The Brasenose conference on the automation of libraries. London, Mansell, 1967.

22. Hines, T. C. and J. L. Harris. Computer filing of index, bibliographic and catalog entries. Newark, N. J., Bro-Dart Foundation, 1966.

23. Jennings, M. A. "Optimizing library automation with a central dynamic store." College and Research Libraries, v. 30, no. 5, Sept. 1969, p. 397-404.

24. Joliffe, J. W., M. P. Line and F. Robinson. Why libraries differ and need they? In no. 14 above, p. 62-68.

25. Kilgour, Frederick G. "Concept of an on-line computerized library catalog." Journal of Library Automation, v. 3, no. 2, March 1970, p. 1-11.

26. Kilgour, Frederick G. "Initial system design for the Ohio College Library Centre; a case history." University of Illinois. Graduate School of Library Science. Proceedings of the 1968 Clinic on Library Application of Data Processing. Urbana, 1969. p. 79-88.

27. Kilgour, Frederick G. "A regional network - Ohio College Library Centre." Datamation, Feb. 1970, p. 87-89.

28. King, Gilbert W. and others. Automation and the Library of Congress. Washington, Library of Congress, 1963.

29. Knight, Douglas M. and E. Shepley Nourse. Libraries at large; tradition, innovation and the national interest. New York, Bowker, 1969.

30. Lazerow, Samuel. National collaboration and the National Libraries Automation Task Force. In no. 44 below, p. 56-74.

31. Library of Congress. Information Systems Office. The MARC II format; a communication format for bibliographic data. Prepared by Henriette D. Avram, John F. Knapp and Lucia J. Rather. Washington, 1968.

32. Licklider, J.C.R. Libraries of the future. Cambridge, Mass., M. I. T. Press, 1965.

33. Lipetz, Ben-Ami, Peter Stangl and Kathryn F. Taylor. "Performance of Ruecking's word compression method when applied to machine retrieval from a library catalog." Journal of Library Automation, v. 2, no. 4, Dec. 1969, p. 266-271.

34. Markuson, Barbara Evans. "An overview of library systems and automation." Datamation, Feb. 1970, p.60-68.

35. Meise, Norman R. Conceptual design of an automated national library system. Metuchen, N. J., Scarecrow Press, 1969.

36. National Libraries Committee. Report. F. S. Dainton, Chairman. London, H.M.S.O., 1969.

37. Nugent, William R. "Compression word coding techniques for information retrieval." Journal of Library Automation, v.1, no. 4, Dec. 1968, p. 250-260.

38. Parker, R. H. "Computers, communication and library cooperation." International Library Review, v.1, no. 3, July, 1969, p. 309-315.

39. Paulsen, Peter J. "Networks, automation and technical services: experience and experiments in New York State." Library Resources and Technical Services, v. 13, no. 4, fall 1969, p. 516-519.

40. RECON Working Task Force. Conversion of retrospective catalog records to machine-readable form; a study of the feasibility of a national bibliographical service. Henriette D. Avram, Chairman. Washington, Library of Congress, 1969.

41. Ruecking, Frederick H. "Bibliographical retrieval from bibliographical input; the hypothesis and construction of a test." Journal of Library Automation, v.1, no.4, Dec. 1968, p. 227-238.

42. Science Council of Canada. Report no. 6. A Policy for scientific and technical information dissemination. Dr. Leon Katz, Chairman. Ottawa, Queen's Printer, 1969.

43. Science Council of Canada. Special Study no. 7. The role of the federal government in support of research in Canadian universities. John B. MacDonald, Chairman. Ottawa, Queen's Printer, 1969.

44. Stanford Conference on Collaborative Library Systems Development. Proceedings of a conference held at Stanford University Libraries, October 4-5, 1969. Edited by Allen B. Veaner & Paul J. Fasana. Stanford, Calif., Stanford University Libraries, 1969.

45. Stangl, Peter, Ben-Ami Lipetz and Kathyrn F. Taylor. "Performance of Kilgour's truncation algorithm when applied to bibliographical retrieval from a library catalog." American society for information science. Proceedings, v.6, Annual meeting, October 1969, San Francisco, p. 125-127.

46. Taube, Maurice. The librarian and information control. In no. 12 above.

47. Veaner, Allen B. Stanford University Libraries, Project BALLOTS, a summary. In no. 44, above, p. 43-49.

48. Vickery, B. C. The library as a system for information transfer. In no. 14, above, p. 57-61.

49. Willemin, Silvère. "Technique of union catalogues: a practical guide." Unesco Bulletin for Libraries, v.20, no. 1, Jan.-Feb. 1966, p.2-23.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE
SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque du Canada

Ottawa

May 19-20 mai 1970

Conference Paper No. 4/Document de la Conférence no 4

The standardization of cataloguing

by

Jean Lunn
Director, Cataloguing Branch
National Library of Canada

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THE STANDARDIZATION OF CATALOGUING*

by

Jean Lunn
Director, Cataloguing Branch
National Library of Canada

OBJECTIVES

Cataloguing rules originate in a need to impose order upon a record of unstandardized items and are formulated in order to provide continuing guidance in maintaining order. Rules codify experience and provide a technique for the common solution of common problems. From this it is a short step to the use of rules as a standard which will ensure a certain level of quality so that the record will be sufficiently complete and will be consistently arranged and hence that the content and the location of the record will be predictable.

The next development arises of course from the conception of the idea that economies can be achieved and service improved by using centrally prepared cataloguing copy and by consolidating records so as to provide access to the resources of more than one library. This notion at once imposes a need for some uniformity of records.

Standardization then includes the elements of guidance, of quality control, and of uniformity and these remain its objectives today. First, at least in the context of this meeting, we place particular emphasis on the need for uniformity so that we may consoldiate the records of the holdings of many libraries in one record, be it union catalogue or bibliographic data bank. Following closely, however, in view of the excess of accessions and the dearth of cataloguers, is the need to avoid duplication of effort by sharing cataloguing copy. Implicit in both, but especially in the latter, is the requirement of an acceptable level of quality.

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* National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No. 4. See also attached summary of this paper.

STANDARDS AND UNIFORMITY

We have standards. Indeed we have an embarrassment of standards. None of them produces uniformity. Why not?

First, it is not in the nature of the standard, individually applied, to produce the same result. Standard may be a misnomer. Certainly cataloguing rules are not specifications in the sense of determining the size, shape and quality of something to be manufactured out of malleable materials. The rules are rather a rationalization after the event, an attempt to discern some common elements and impose an artificial order upon items created in increasingly multitudinous forms by people, than whom there is nothing in nature more wildly disparate. Linnaeus' task was relatively easy. So the standards, that is the rules, have to be interpreted and they are open to varying interpretation and of course to misinterpretation.

Second, there are not enough trained interpreters with a detailed knowledge of the rules. It appears to be true, and I have heard echoes from as far away as Australia, that most graduates have not learned to catalogue. Intensive training in cataloguing seems no longer to be provided in all schools. I do not know why. I am not suggesting that library schools do not have good reasons for what they do. Perhaps it is not possible to interest many people in cataloguing. If so then possibly we need more attractive lures for the few who are temperamentally suited to that odd pursuit. Such as more professional recognition. This is sadly lacking and desperately needed for all librarians but most in the case of cataloguers.

Third, authorities in charge of disbursements usually attach little importance to cataloguing, have no appreciation of its difficulty, do not believe that it is an intellectual exercise and are unwilling to spend money on it. They see no reason why any book should take longer than five minutes to catalogue. They are not only incapable of apprehending the full beauty, subtlety and value of bibliographic cataloguing, who but a cataloguer could, but they cannot be swayed by any such arguments as the uselessness of having a great many salesmen out front and not enough stockkeepers in behind to control the inventory so that the orders can be filled. I have to admit, however, that their feeling that to support cataloguing is to throw money into a bottomless pit may be instinctively sound. We must find something better than our traditional methods if we are ever to control the flood. Meanwhile, however, we lack both trained manpower and money.

Fourth, we have too many standards. The recording of books has developed from the simple inventory, now one of the functions performed by the shelflist, through the finding list to a combination of finding list and bibliographical tool which locates, describes, distinguishes and assembles material. At the same time the goals of the rule makers have broadened from the orderly arrangement of the record of one library to cooperation in cataloguing among not only many libraries but many countries.

Panizzi's 91 Rules (adopted 1839) are based in great measure on title page cataloguing which makes use of the name associated with the particular book and which is assumed to be the name most likely to be sought in the search for the particular item. This is the finding list approach. At the same time the idea of the assembling function appears in the requirement that works of noblemen always be entered under their family surname and in the provision for entering some categories of material under form headings such as Academies, Periodical Publications and so on. Shortly after Panizzi, Charles Jewett, Librarian of the Smithsonian, extended the assembling principle by specifying in his rules the entry of pseudonymous works under real names and in innovating the principle of corporate authorship. It was Jewett also who was seized with the idea of cooperative catalogue making. His proposal for a union catalogue for American libraries was premature but his ideas for formulating rules for the guidance of contributing libraries took root. A quarter of a century later, in 1876, Charles Cutter in his "Rules for a printed dictionary catalogue" enunicated the principle that entries must be made under a consistent form of the author's name, not necessarily the form found on the title page, in order to assemble the works of the author and to this end established the principle of entry under author or some conventional substitute thereof. Implicit in this is the acceptance of author as main entry.

The assembling or bibliographic function of the catalogue and still more the formulation of codes for general use in order to promote cooperation or sharing in cataloguing demand uniformity and this is sometimes at variance with the purely finding function. The conflict results in the apparent distortions which invite criticism, especially, in my experience, from faculty members, about the extreme foolishness and obstinacy of cataloguers who enter books under esoteric headings which no one would seek.

These functions of the catalogue established in the last century were carried forward and extended in subsequent developments of cataloguing rules and practices, notably the distribution of printed cards by Library of Congress in 1901, the Anglo-American code of 1908 and the A.L.A. code of 1949.

During this time there was increasing emphasis on uniformity and it was perhaps improved technology or at least the application of technology which made possible the reconciliation of the identification of the particular item with uniformity. The use of the cross reference was conceived of early but in 1876 Cutter assumed the use of the actual added entry. Once technology was applied to the production of uniform printed unit cards, any number of entries was feasible and given enough entries the catalogue could both assemble and provide the direct approach to the particular item. But multiple entries do not solve the problem of the single entry catalogue.

The conception of the added entry and the availability of the flexible unit card must also have helped to separate out the subject function of the catalogue and to clear up the confusion and conflict of purpose evident in early catalogues, arising from indecision regarding priority of function and from the attempt to use titles, catchwords and inversions as subject approaches. A remnant of the confusion of function may exist in the entry of institutions under place and in the use of form headings. This suggests to me that the new technology with its even greater flexibility might be employed to divorce the distinct and different functions of the catalogue from one another and thus by enabling each to go its separate way allow the catalogue to achieve its different and sometimes conflicting aims. Further, with its echoes of the past when efforts were made to provide a subject approach by catchword titles, the use of the KWIC index in the place of subject analysis seems not only retrogressive but an insult to the potential of the computer. More of this later.

Meanwhile, as we all know, the ALA code of 1949 came under criticism as a set of specific rules for particular cases which had resulted in inconsistencies, exceptions, ad hoc decisions and ineffectiveness as a finding tool. In due course, after prolonged deliberations and a search for underlying principles, the Anglo-American Cataloging Rules appeared in 1967. It is to be noted that these rules are more permissive, or more discretionary,than their predecessors of 1949 and give greater emphasis to the finding list aspect of the catalogue by making use of the title page as a basis for information and, in the words of its Introduction "...providing more direct headings, reducing the complexity of certain headings, and substituting headings that correspond more closely to the normal usage of educated persons for certain former headings that emphasized technical correctness to the point of pedantry." It is evident that some of the uniformity was thrown out with the restrictions and the absurdities.

Further, notwithstanding the advances made in the AACR and the commendable effort to discern and formulate principles which have a general application, the fact remains that we have not yet achieved an absolute standard. There is still no one element and no one principle applicable to all library items. This is tacitly admitted by the fact that the new code, like its predecessor, provides special rules for particular classes of material. Moreover the ever increasing diversity of library materials continues to frustrate us. We think that we have got hold of a sound principle in the determination of authorship responsibility, and so no doubt we have as far as it goes, but now we are adding educational non-book materials. These include a category with the curious name of "realia". The determination of the "authorship responsibility" for, say, a rock specimen may lead us farther into the realm of theological speculation than, for practical purposes, we may care to go.

I said earlier that cataloguing rules are open to varying interpretation and to misinterpretation. None more so than the AACR. The text of these rules is maddeningly elliptical. Nothing is spelled out. Deductions have to be made from negative evidence, not what the rule says, but what it does not say. No references are made to remind the cataloguer of a particular aspect or factor which makes one rule applicable rather than another which is given several pages or chapters further on. In short, AACR are full of pitfalls, with no warnings posted for the unwary. So there is need for particularly skilled cataloguers to apply the code. And, as I have also said earlier, this is the time when training in cataloguing appears to be less intensive, when it needs to be more so.

Add to the inherent tendencies of the latest code to produce diversity rather than uniformity, the fact that many libraries are now using both the old and the new codes, doubtless with as many varieties of superimposition as there are libraries. It may soon be a cause for rejoicing when the Union Catalogue gets a mere eleven different entries for Taverner's Birds of Eastern Canada.

Two codes will also appear to be a modest number if we accept a long standing invitation to embrace a third, or international, code. I refer, of course, to the Paris Principles adopted by the IFLA International Conference on Cataloguing Principles, held in Paris in 1961. As we all know, the movement in many countries towards revision of their own cataloguing rules culminated in an international meeting which achieved a quite remarkable measure of agreement about principles but naturally rather less of adoption. The work of Seymour Lubetzky, which underlies the present AACR, strongly influenced the Paris meeting, and the Statement of Principles adopted by that meeting were accepted as the basis for the AACR. Nevertheless, the AACR make some important exceptions to the Paris rules. The best known and most radical departure is the continuation of entry of institutions under place. Change was felt to be too costly.

It is gratifying to know that the international movement is alive and well. At the moment it is living principally in London under the rather horrible name of IMCE. Last year, 1969, IFLA called its International Meeting of Cataloguing Experts in Copenhagen under the chairmanship of Mr. A.H. Chaplin, Principal Keeper of the Printed Books, British Museum. This meeting agreed that it was not authorized to alter the Statement of Principles adopted in Paris in 1961 but it pointed out certain weaknesses and inconsistencies and made recommendations for revisions and improvements. Of particular import to a bilingual country is the recommendation that in the interests of international uniformity the use should be encouraged of the original form of names and titles, including names of states, instead of the form used in the language of the country in which the library is located.

The Paris conference of 1961 limited itself to the choice and form of headings and entry words. The major development of the Copenhagen meeting was the extension of the search for international uniformity to description. The meeting considered a study of national bibliographies made for Unesco and IFLA by Mr. Michael Gorman of the British National Bibliography with a view to seeking common elements as a basis for an international system of bibliographic description. It was agreed that there should be a standard bibliographic description consisting of a statement of the data which could usefully be included and providing for the arrangement of the bibliographic elements in a certain fixed order. The inclusion of the International Standard Book Number was strongly recommended. A working party was set up, under the chairmanship of Mr. A.J. Wells of the British

National Bibliography, with as members, Mrs. H.D. Avram (L.C.), Dr. A. Domanovszky (University Library, Budapest), Mr. M. Gorman (BNB), Mme S. Honoré (Bibliothèque nationale, Paris), Mr. K. Nowak (Deutsche Bibliothek, Frankfurt a/M), and Mr. A. van Wesemael (University Library, Utrecht). This group has drawn up and circulated a draft standard bibliographic description and is continuing to meet to consider the comments received.

The other particularly interesting development is that the IFLA Committee on Uniform Cataloguing Rules is now seeking funds, that is, financial contributions from all countries concerned, "to establish a continuing secretariat to assist and coordinate the future work arising from the resolutions of the International Meeting of Cataloguing Experts and directed at creating an international system for the exchange of bibliographical information and promoting the necessary uniformity in headings and description." (Resolution proposed at Copenhagen by officers of the IFLA Committee on Uniform Cataloguing Rules). It seems reasonable to predict that support will be forthcoming from Canada in principle and, it is to be hoped, in kind. This may also increase whatever moral obligation there is to adopt still another code.

To sum up this long section on standards and uniformity, I suggest that the position is that no one code will produce uniformity by itself since each is open to variation in application and interpretation either intentionally or accidentally, that we lack both cataloguers and money, and that we have a surfeit of codes inconsistent with one another. This is not to despair. It simply means that we need something more than a code. First let us consider, briefly, the environment.

THE CANADIAN SITUATION

Canada spells diversity. We are seeking for practical purposes a modus operandi in a situation which includes

(1) At least three cataloguing codes, one foreign, one continental, one international, one going, one here, one coming, none of them Canadian, all of them inherently variable, all of them trying to serve two masters, finding tool and bibliographical tool, one of them providing for the direct approach for ease of location, two of them sacrificing this facility in order to achieve uniformity;

(2) The usual variety of types of library;

(3) A number of major libraries heavily dependent upon the wholly admirable, indispensable services of a foreign national library;

(4) Three systems, one manual (doubtless going) one mixed, that is partially automated (here) and one fully automated (doubtless coming);

(5) Two official languages, and perhaps some increasingly insistent other tongues;

(6) Eleven governments, not counting the municipalities, all with some jurisdiction over some libraries.

Have we any hope of achieving any standardization in this vertical, horizontal, transitionary, institutional, technological, linguistic, jurisdictional mosaic? Canada is a microcosm of the world. IFLA believes that there is some hope for world uniformity. Perhaps we can be at least equally optimistic.

SOME PROPOSALS

Discussion of the means of achieving standardization, beyond the limits of a cataloguing code, is outside the scope of this paper. So is consideration of particular classes of material. Nevertheless in some of the following suggestions I trespass upon fields assigned to others. For this I apologize, while persisting in my error.

(1) Granted that no code yet devised will, by itself, guarantee uniformity, nevertheless a universally accepted code is an essential foundation. In view of our dependence on Library of Congress for cataloguing copy for non-Canadian publications, it is improbable that we can afford complete independence. Before attempting a cost/benefit analysis to prove or disprove this, let us wait to see if Library of Congress does take the drastic action, which it is considering, of closing its catalogues and beginning with the new code modified to conform more closely to the Paris Principles.

Meanwhile, might we undertake, or urge the undertaking of, a major effort not to modify the AACR but to elucidate its highly condensed text? ALA, LC and CLA committees carry on a continuing effort to improve and clarify the rules but perhaps we need more than this, say an explanatory manual to spell out the meaning of many obscure passages. We might arrive at what we need by taking the French edition when it is ready and translating it back into English, capturing, if we could, some of the clarity and precision of the French language. (The French translation, now in preparation, was instigated by and is under the direction of the Ecole de Bibliothéconomie of the Université de Montréal. M. Denis Savage of the National Library of Canada is participating in the work). The 1969/70 Annual report of the ALA Descriptive Cataloguing Committee mentions the possibility of a revised edition of AACR within the next five years. It is unlikely however that such a revision would undertake the rephrasing of the whole text.

(2) We might consider adopting the AACR for Canadian publications, adapting the code to suit our bilingual requirements by introducing some of the international rules.

(3) A particularly fruitful vineyard in which to labour, and one exclusively ours, is the field of government documents, federal and provincial. These may be of more interest to foreign countries than any other Canadian publishing. To establish bibliographic control and provide cataloguing copy of our documents could be of the greatest value both to ourselves and to others. We must encourage the organized distribution of provincial government publications, a category of increasing interest to political scientists and to everyone working in health, welfare, education and other fields under provincial jurisdiction. We need to develop our own system of classification and/or shelf arrangement and to provide informed subject analysis in depth instead of relying, faute de mieux, on superficial catchword indexing. We could adopt the AACR, modified as required, and make our own interpretation of the difficult rules for government entries. The national bibliography is an obvious agency to establish and maintain bibliographic control and to impose uniformity of entry on current publications, given agreement on what we want. For past publications there is wide scope for cooperation among libraries with large holdings of documents, especially those which have catalogued their collections.

(4) Within the limits of using a code in itself to produce standardization we should adopt as our first principle a minimum of uniformity

and a maximum of tolerance for one another's cataloguing, rather than searching for a universal identical entry which transcends everything which divides us. If we want uniformity only, or at least primarily, for interfiling we could stop there and accept in the rest of the entry both the native language of the cataloguer and whatever diversity of detail was prompted by local requirement or even personal idiosyncrasy. In fact we already do accept a good deal of diversity in our catalogues. We mix printed L.C. entries with typed original cataloguing regardless of inconsistencies in detail and format and recently we are happily accepting L.C. Shared Cataloguing which includes details extraneous to the needs of most local catalogues. We could be still more permissive.

We recognize, of course, that uniformity for interfiling still means rather a lot of uniformity. Let us not, however, lose sight of the objective and practice uniformity for its own sake. The result of that is hidebound, legalistic cataloguing. Practices once functional are carried on after the need for them has disappeared. The purpose of notes, necessary in one situation, is misunderstood and similar notes are added conventionally to other entries for which they are not required. Cataloguing becomes stultified by purposeless regimentation.

(5) We must not, however, lose sight of standardization for quality control. This has rather more to do with the kind and quantity of data required in the entry and with the inventory control exercised by the library over its own collection. The advocates of brieflisting and economy frequently argue that the catalogue provides more information than the user needs or cares to have. Their opponents

then mention the need for user studies. I suggest that the important user study to make is that of staff use. Certainly the catalogue is wasted on the public, no matter how selected or specialised that public may be. There is no harm probably in letting the public browse about in the self serve catalogue but it is in fact the library staff which must be able to produce the item or the information. Even the supermarket enjoins the customers to ask Pierre if they do not see what they want. The standard must therefore ensure sufficient inventory control for staff use locally and to make possible participation in cooperative schemes for the sharing and rationalization of resources. The computer is allowed to have extra fields for its own little housekeeping arrangements. The needs of the library collection are not less.

(6) Implicit in most discussions about cataloguing standards, including, so far, in this discussion is an acceptance of the fact that we are seeking standards for manual systems, or for systems automated only to the extent that the computer is used to produce card or book catalogues. But what of the fully automated, computer-stored catalogue? At this point in time it is beyond the limits of my imagination to think that the ghost will never be required to materialize, will never have to produce hard copy or otherwise present itself to human eye and mind. It is also true that with respect to handling textual material the computer is still in its infancy but given sufficient costly nourishing food, like human brain, the little monster may grow rapidly. In any case, floundering though our efforts will be, let us begin now an effort towards building or assembling a code for the fully automated catalogue.

First let us attempt to decide whether the objectives or functions of the catalogue as laid down by the Paris Principles and accepted by the AACR are still valid for the computer catalogue. Do we still want "an efficient instrument for ascertaining (1) whether the library contains a particular book... and (2) which books by a particular author and (3) which editions of a particular work are in the library". Or do we want more? Or less?

As for formulating the standard and/or the rules, we know of course that a complete code will not spring fully armed from anyone's head. We know also that ultimately technology dictates its own design. Witness the vehicle which the internal combustion engine transformed from the horseless carriage to the automobile. Or consider the progress from the flaming branch snatched from the fire to the torch to the candle to the gaslight to the electric fixture, each stage beginning with a form borrowed from its predecessor. The computer catalogue code will develop pari passu with the capabilities of the computer. We should, however, begin to capture elements of the new code as we go, or even just stumble, along, considering such matters as

the concept of the main entry;

the effect of different techniques of searching upon the extent of uniformity of input required;

the need for more explicit cataloguing instead of cataloguing by omission and assumption (as we do now) in order to facilitate programming;

the need for uniformity of other elements which we do not now usually attempt to retrieve (e.g. publisher) but which we may wish the computer, with its greater facility, to retrieve,arrange and print out;

the capability of the computer for conversion, e.g. between languages, and the effect upon the nature of the input;

the requirements for format recognition; and so on.

(7) Above all, we should press for the adoption of the International Standard Book Number and its assignment to all publications, past, present and future. This is essential. In a great host, as an army with banners, let us march on our publishing centres, bearing placards, and upon our capital cities, bearing letters to our members that the adoption of the ISBN may pass into law. We might try the Canadian Standards Association too.

(8) Finally, let us recall the degree to which our search for uniformity and quality is frustrated by the conflicting functions of the catalogue as finding and as bibliographical tool and the high cost in delay and money of bibliographic cataloguing.

To achieve uniformity and quality we swing towards the bibliographic or cataloguer's catalogue full of geographical names in the vernacular, Popes in Latin, translations under obscure, transliterated but uniform titles, Bible entries with at least five subdivisions, all this together with dazzling notes which preserve forever the life story of the periodical. These catalogues are colossally costly to produce, difficult to use and appreciated only by the minority. So we begin to swing back towards the other horn, the finding tool,in which we use the "common sense" approach and base our entries upon our personal assumption of what headings correspond to "the normal usage of educated persons". Then uniformity escapes us and if we are not careful quality does too. We should note however that the extremists of the finding list school, the advocates of free brieflisting and doing one's own thing, usually assume that the bibliographic catalogue will continue to exist somewhere else.

I suggest that we abandon our uneasy compromises and seek divorce of the incompatible.

We remember that in the early days confusion arose over the arrangement and nature of entries because it was assumed that one entry must serve all purposes and who was to decide to which purpose priority was to be given. The advent of the unit card, printed or otherwise reproduced, made possible as many different entries as anyone required to serve particular purposes and thus helped to sort out and separate the functions of the catalogue.

Could we not use the new technology to separate the two major and conflicting functions of the catalogue which we have found impossible to combine satisfactorily? Let us sever catalogue from bibliography. Let the catalogue be just that, a simplified list of essentials needed to locate and identify each item. Let the national bibliography be a fully annotated, detailed bibliography. Relate entries in catalogue and in bibliography by the International Standard Book Number.

One even wonders whether it would be practicable to begin now without, or while, waiting for the computer and the ISBN. Consider some of the results of the divorce:

National bibliographies would be free to change and improve, without having to drag the whole weight of library catalogues after them. We know that the AACR were prevented from adopting desirable rules because of the cost to libraries of revising entries.

Library catalogues would no longer be invited to leap to their deaths over cliffs or into the sea in pursuit of the fickle national bibliography.

Bibliographies would cease making concessions in form and content to the library catalogue. The catalogue could stop trying to be a bibliography. In my opinion the IMCE meeting at Copenhagen lost sight of any distinction between the two and fell into a certain amount of confusion as a result, a confusion which persists in the draft proposal for the standard bibliographic description.

The bibliographic data bank would be free from the cost and burden of storing and handling a great mass of detail. It could then perhaps produce very quickly for users entries adequate for their own finding catalogues. Single-entry or one-shot temporary entries would no longer be necessary in card catalogues. Vast expense would be spared locally when or if a library had its own computer-stored catalogue.

National bibliographies, if given a fraction of the money and manpower saved in cataloguing, could produce full and careful bibliographic entries and many profound and sophisticated subject approaches, without pressure from libraries demanding instant cataloguing copy. We might even catch up with retrospective national bibliography and ticket every item neatly with its very own ISBN. Both current and retrospective bibliographies could become models of accuracy, completeness and ease of use, masterpieces of mature beauty albeit rather Rubenesque in proportions and somewhat gorged in shape.

The computer-produced national bibliography could be distributed in any desired form, in whole or in part, with special lists on demand. Automation could make possible frequent cumulations in book form for general distribution, as well of course as in the form of cards and of frequently updated tapes, as required.

Trade bibliographies, acquisition records and library catalogues might find themselves if not at one,at least at peace, with one another. Records originating with order departments or even with publishers might require only a little dressing up to be suitable for the library catalogue.

Library technicians could become cataloguers and astound management with their high production figures and low production costs.

Catalogue librarians could become bibliographers and subject analysts and might even gain some faint recognition from those in control of funds and job classification.

Library schools might be able to reach on the training in bibliography of the chosen few who like that sort of thing.

What are the disadvantages? Principally, that in addition to the three current standards, the number of which I deplore, I seem to be suggesting three more, one designed for computer input, one developed specifically for national bibliographies and still a third, for the new style library catalogue would require a standard of its own. Such a standard should guarantee a quality and format adequate both for local use and for participation in cooperative enterprises among libraries.

We are, however, in danger of losing bibliography, the record of the past, because the computer cannot economically handle it and neither can we, at least not if we all go on building our own bibliographies in our own catalogues, to the ruination of both. The machine may dictate that we do not what we want to do but rather what it can do. I view the situation with alarm.

I suggest that we snatch our bibliography from the jaws of the computer and perhaps give the monster its little hydra head with the catalogue. Then by means of human intervention we can keep our Frankenstein moron in its proper place as the servant, not the master, of bibliography.

Vive le catalogue indépendant! Vive la bibliographie libre!

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE
SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque du Canada

Ottawa

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Conference Paper No. 4a/Document de la Conférence no 4a

The standardization of cataloguing; a summary

by

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THE STANDARDIZATION OF CATALOGUING; a summary*

by

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The paper on this subject which was circulated is rather long so I propose to read a somewhat shorter version, with some variations on the original.

Why standardization? (1) In the first instance rules were developed for the catalogue of a particular collection, so as to impose order, to provide consistency of treatment, to record decisions and solutions to problems for future guidance, and to ensure an adequate level of quality or completeness of detail, all so that the content and location could be anticipated.

(2) Next comes the idea that we can avoid duplication of effort by cooperative or, more usually, centralized cataloguing and this brings with it a still greater need for consistency and a more rigid standardization.

(3) The third step is the union catalogue. The idea of the main entry arises first from the need of a consistent heading to identify or to refer to a particular work and to subarrange works under any other kind of entry, particularly subject. Hence rules for choice as well as for form of entry. Uniformity of choice of entry becomes particularly desirable when we wish to consolidate records of the holdings of a number of libraries in a single entry union catalogue. The need for a uniform main entry would of course be less urgent in this case if multiple-entry union catalogues were economically feasible. These are the reasons for standardization.

It is not that we lack a standard, that is a cataloguing code. The standard, however, has not produced uniformity. Why not? First, it is not possible for any code to do so because the rules are not specifications for the manufacture of identical objects. They are instead guides to the recognition or identification of characteristics of highly varied and highly variable items loosely called library materials. No two cataloguing agencies applying the same rules will always arrive at the same conclusions.

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* National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No. 4. Summary

If one code will not produce uniformity, two or three codes in use at the same time and inconsistent with one another will produce even less. Currently of course we are using the ALA code of 1949 together with the Anglo-American rules of 1967, presumably with as many varieties of superimposition as there are libraries. At the same time we are being invited to use the Paris Principles, the international code adopted by the International Conference on Cataloguing Principles which met in Paris in 1961. Not only are we seeking uniformity within our own country but it is becoming incumbent upon us to conform to a code designed to standardize world cataloguing. Inherent in this is the need for compromise, and the sacrifice of local convenience for, it is hoped, the greater good.

Although no code by itself will produce uniformity, a code is an essential foundation. An obvious step towards uniformity would be to adopt one code. But let us first consider our particular situation.

First, a number of our major libraries are heavily dependent on Library of Congress cataloguing.

Second, we have two official languages.

Third, we have or will soon have, three systems, one manual, one partially automated, (that is deriving catalogue cards or book catalogues from tapes), and one fully automated, not quite here, which will involve a computer-stored catalogue or bibliographic data bank.

In this situation, can we in Canada adopt one code? It goes almost without saying that this would not be a return to the 1949 code.

First, it would appear to be unthinkable that any library now dependent on L.C. could afford to or would wish to abandon a service which provides most of its cataloguing copy. In any case we must wait to see if Library of Congress does take the step, which it is now considering, of closing its catalogue and beginning afresh with the Anglo-American rules modified to conform more closely with the Paris Principles. It would probably adopt the rule from the British edition of AA which enters institutions under their own names rather than under place.

We might, however, consider whether there would be an advantage in adopting the Anglo-American code for Canadian materials as Canadiana has done. We have had no reaction as to the effect of the policy adopted by Canadiana. Is the percentage of Canadian material in most libraries insignificant? Would adopting AA for Canadian imprints be merely a token gesture or would it be a move in the right direction?

I suggest that a very important field which is open to us, is that of Canadian federal and provincial publications. There are few sources of cataloguing copy for documents other than Canadiana and there are indications that the document sections of Canadiana are of particular interest to foreign libraries. It seems that many libraries do not catalogue their documents. Is this because these libraries believe that it is unnecessary to catalogue documents or only that none can accomplish all the cataloguing it has to do and that documents are a category over which some degree of control can be established merely by shelf and kardex arrangement under issuing office? Would libraries welcome a catalogued documents collection if some one else would provide the catalogue copy? Is this not a category for which we should develop a national scheme of classification or shelf arrangement and one cataloguing code? The obvious vehicle for the distribution of copy for current government publications might be derived from the editing of entries provided by the libraries which do have catalogued collections. Here is a field for cooperative effort.

If we were to decide to embark upon independent action and to adopt one code, we should consider some modifications of the Anglo-American rules in an effort to provide for our bilingual needs. Such might be the use of names in the vernacular or in Latin, the greater use of uniform titles and the assembling of translations under original titles. We could borrow or adopt some elements from the Paris Principles. The most recent international meeting, at Copenhagen last year, advocated the use of geographical names in the vernacular. How acceptable this would be in local catalogues may be questioned. The case might not arise very often however with Canadian material. English speaking Canada should have no great difficulty in accepting Trois-Rivières and Saint Hyacinthe. I do not know how firmly French language libraries are attached to Terre-Neuve and Colombie-Britannique. Popes and classical authors in Latin would be a useful compromise.

With respect to the AA code we need help with its highly elliptical text which gives rise to varying interpretation and to misinterpretation. Some kind of explanatory manual would be helpful, failing a complete rephrasing of the rules. Here the French translation now in progress could be extremely useful. Nothing requires closer scrutiny and a greater effort at understanding of a text than translation does. Translation into French is particularly useful because of the deserved reputation of the French language for clarity and precision. French spells it out.

I urge that we strive only for that degree of uniformity which is essential, primarily for interfiling. For the rest let us accept local variations and the use of one another's native language.

While we are considering the adoption of a code designed for manual systems, let us not lose sight of the burgeoning automated system. We are in a transitional stage and I do not think that at this point anyone can produce any very definitive code for the computer catalogue. I suggest however that we make some concerted effort to capture the elements of such a code in our progress towards automation. We could for example consider such matters as

the concept of the main entry;

the use of compression codes in searching and the effect upon the need for uniformity in detail;

the need for more explicit statements for ease in programming as opposed to omissions or contractions which convey a meaning by implication;

the need for uniformity in elements which we may now wish to retrieve although we have not done so in the manual system, for example the publisher statement;

the implications of the potential of the computer for conversion, for example between languages;

the need for format recognition, and so on.

Finally, let us think about some of the difficulties which have been encountered in formulating a code or standard. Some of the floundering in early catalogues stemmed from uncertainty or indecision about the ends to be served. Should the catalogue be an inventory in shelf order, or an author catalogue, or a title catalogue, or a subject catalogue, or some kind of compromise with catchword titles or form headings? Much of this conflict and confusion was sorted out with the advent of the catalogue card and the unit form which enabled the catalogue to provide many approaches. The conflict which remains is that between the catalogue as a finding tool to locate individual items and the catalogue as a bibliographic tool to assemble related items. The latter requires a high degree of uniformity and hence an inflexible standard. The result is that some entries appear to be, perhaps are, artificial and make the particular item difficult to find.

Recent codes swing between the two extremes. The 1949 ALA code provides for a considerable degree of uniformity. The 1967 AA rules adopt the "common sense" entry in many instances and thus introduce greater variation. The Paris Principles, that is the international code, go far beyond ALA in providing for uniformity at the expense of convenience in locating the item in the local catalogue.

I suggest that we consider separating these conflicting functions of the catalogue. This could be done manually but probably more easily by automation. If technology helped clear up some of the confusion by providing the printed unit form catalogue card, the new technology might serve to divorce the catalogue, that is the finding list, from the bibliography. We could relate the two by a common identifier. The best and most obvious is the International Standard Book Number. We could also make use of L.C. and other national bibliography entry numbers.

Here are some of the advantages:

The local library catalogue and the national union catalogue or bibliographic data bank could save vast sums of money by containing only those elements necessary to identify the particular item. In some instances this could be nothing more than author, titles, publication date and ISBN (which shows country and publisher) together with added entries other than subject and, I think, shelf classification to provide some subject approach. This would save costs not only in storage, but also in cataloguing or preparation of input, since library technicians could do much of the work.

Professionally trained bibliographers and subject analysts could devote their time to the preparation of current and retrospective national bibliographies with fully detailed entries, all necessary assembling forms of headings, artificial or not, and highly refined subject approaches. The bibliography could be stored both in book form, frequently cumulated, and in machine readable form, probably on disks. The research worker could then search the bibliography for his needs, obtain printouts if desired of desiderata and/or note the identifier. These identifiers could then be run against the local catalogue and a system could be designed to show whether the library had the book, whether it was out, at binding, on order etc. and could also connect with the national data bank to show where else the item could be obtained.

The central bank, with fewer elements to handle and a more flexible approach, might be able to provide economically an on line service of producing catalogue entries for local use.

The bibliography, relieved of the massive burden of library catalogues dependent upon it and resistant to change, would be free to alter, to experiment, to improve and to achieve uniformity with other national bibliographies.

Above all, bibliography, the precise record of the past, might be protected from destruction by the current limitations of the computer. These limitations may be more financial than technical but they exist. There are analogies between early catalogues and the attempts to handle bibliographic material by computer. The KWIC index resembles the now abandoned catchword title, descriptors are primitive subject headings. The computer appears to be in the tradition of the mass production, high volume machine. It will produce something better than the worst handmade article, it will make possible a wide distribution of useful items but it will not equal in quality the best that can be done by the skilled craftsman. The machine will undoubtedly be increasingly refined. Meanwhile however I do not believe that we should toss out bibliography because the computer cannot handle it. By separating catalogue from bibliography we can perhaps use the computer in the best interests of both.

To sum up, the principal suggestions for further investigation or future action contained in this paper are

1. Adopt the Anglo-American rules, modified to suit our own needs, for Canadian material.
2. Adopt a national code and arrangement for Canadian government publications and catalogue them.
3. Provide an explanatory manual for the AA rules.
4. Begin to assemble the elements of a code for the computerized catalogue.
5. Divorce the finding list function from the assembling function and produce simplified library catalogues and sophisticated national bibliographies as related but separate entities.

ENGLISH TRANSLATION *

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

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Normalisation de la classification et des vedettes-matière

par

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*for bibliography see original paper

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STANDARDIZATION OF CLASSIFICATION AND SUBJECT HEADINGS*

by

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Bibliothèque de l'université Laval

SUMMARY OF RECOMMENDATIONS:

CLASSIFICATION:

Short term: Standardization of Canadian adaptations of LC by means of a computerized program.

Result aimed at: computerized codification of the tables, automatic generation of a bilingual vocabulary or index correlated with the classification codes.

Long term: Extension of this bilingual program to the whole of the LC classification.

SUBJECT HEADINGS:

Short term: Standardization of a body of Canadian subject headings.

Result aimed at: Production of a computerized bilingual list of Canadian subject headings, with subjects correlated with the classification codes.

Official acceptance of the computerized Laval list of subject headings in French and the creation of a permanent agency within the National Library for revision and updating of this list.

Long term: The gradual building up of a general bilingual list by means of cross-checking with class numbers (L.C. Dewey, U.D.C.).

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* Translation of a paper given at the National Conference on Cataloguing Standards/ Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/ Document de la conférence No. 5

Standardization

As Allen B. Veaner emphasized in an article in College and Research Libraries, January, 1970, entitled "The application of computers to library technical processing," one of the results of the application of computers to library systems has been the demonstration of the necessity of bibliographical standardization to facilitate the retrieval and automatic interchange of stored information. This standardization, of course, is equally desirable outside the context of automation, to facilitate the communication of bibliographic information on a national or international scale. Moreover, librarians have not waited for the advent of the computer to attack this problem, as evidenced by the cataloguing codes, particularly the Anglo-American code, and the international standards in the course of being developed.

Classification

Position Taken

Nevertheless, even if, ideally speaking, one could conceive of a high degree of standardization of the main technical services operations, it seems to me that there is a great variation in the actual application of standards from one procedure to another.

Thus I am of the opinion that desirable as standardization of cataloguing may be, feasible, and already strongly endorsed internationally (see the proceedings of the International meeting of cataloguing experts held in Copenhagen, August 22-24, 1969), standardization of classification seems to me illusive, wasteful even and thus very unlikely to be realized, for the following reasons: the inconceivability of an international classification system applicable to the whole body of documentation;

the gradual weakening and abandonment of the larger existing systems such as U.D.C. and L.C.; the marked tendency these last twenty years towards the development of specialized documentation centres each developing its own system; the proliferation of special systems of classification for the treatment of various collections, e.g. maps, patents, archives, official documents, etc.

Essentially what is lacking is a universal identifying element and it seems that for the moment the essential approaches to an automated bibliographic bank, outside of certain accession numbers, remain standardized author-title entries or their equivalents and, above all, standardized subjects.

Classification vs. ISBN/ISSN

Nevertheless, the recent advent in the publishing world of the International standard book number and the introduction of its counterpart, the International standard serials number into the national American program for a computerized periodicals network (National Serials Data Program), open new and very promising horizons for the subject with which we are concerned. In effect the new system, already applied to a large part of the current production in 1970 and which ought eventually to cover the main part of past production, identifies uniquely not only a given title, but the volumes of a work and the different editions of a work. We find here, therefore, a specific universal designator lacking in existing classification systems. Moreover, the fact that the enterprise is in the hands of the most powerful publishing houses allows one to hope for the world-wide application of the system in short order. Librarians have been quick to realize the immense implications of this new development. Already the Library of

Congress is studying the possibility of replacing the L.C. Card number by this standard numbering, and the National and University Libraries Section of IFLA/FIAB (International Federation of Library Associations/Féderation internationale des associations de bibliothécaires) at its 35th annual conference held in August 1969 at Copenhagen recommended the creation of a task force to study the best use which can be made of the International standard book number.

It must be noted that despite its universality, the new system permits only an external bibliographical identification, I might even say a physical identification of the item, and lacks the essential approach by subjects or descriptors; it is in fact, the equivalent of an international accession number.

The Canadian Situation

This is why, in limiting oneself to the situation in the large Canadian libraries, one can look at the problem from a different angle. Two considerations have to be taken into account. Firstly, most of the large libraries are using or have decided to use the L.C. classification system. Secondly the Canadian adaptations of L.C. for history (F5000), literature (PS8000) and law (K) lend themselves to being considered as a specialized information module, unique of its kind because reflecting three specific aspects of the Canadian culture.

Under these circumstances, I would propose that a first attempt at standardization of classification be made with the three Canadian adaptations of L.C., and that it be made in the form of a computerized program, taking into account the experiments underway at Syracuse, N.Y. with LEEP (Library Education Experimental Project, School of Library Science, Syracuse University, Syracuse, N.Y.). The first aim would be the computerized codification of the classification tables concerned, the automatic generation of a bilingual vocabulary or index permitting reference to these same tables, and finally the creation of a specialized sub-module of information or of a specialized information bank which could be combined with the eventually computerized systems of the National union catalogue and Canadiana. The long term aim would be the extension of this bilingual program to the whole of the L.C. classification, in collaboration with the Library of Congress Information Systems Office or other agencies working along the same lines.

Naturally there are several prerequisites to putting this project into concrete form, above all the putting into final form of the tables concerned - that of the F 5000 class particularly, the last revision of which done by the Bibliothèque nationale du Québec still leaves much to be desired - and equally the official recognition of these adaptations and the provision of means of keeping them up to date. To this end, I would recommend the creation, within the appropriate section of the future Research and Planning Branch of the National Library, of a task force whose mandate would be to complete these preliminary phases and launch the project.

Subject Headings

Position Taken "Mutatis mutandis" the same considerations apply to the standardization of subject headings.

Subject Headings vs Descriptors

On the one hand, with the proliferation in recent years of specialized thesauri and the increased current use of free vocabularies for the analysis in depth of documentation, one questions increasingly the value of controlled vocabularies such as the Library of Congress subject headings, the Laval list and similar lists and consequently one begins to doubt the practicability of the standardization of such lists.

Canadian Context

On the other hand, still limiting oneself to the Canadian context, one might envisage a first step of standardization with a 'corpus' of Canadian subject headings. The first aim would be essentially the same as that proposed for classification, i.e. the constitution of a specialized information bank, capable of being integrated with the eventually computerized systems of the National union catalogue and Canadiana. Here, likewise, the program could take its inspiration from the LEEP experience. Moreover, one might establish correlation between the Canadian subject headings and the classification codes. Naturally, it is as essential here as there to establish the relationships of English headings with French headings and vice versa. The long-term aim would ideally be the extension of this bilingual program to the whole body of the L.C. subject heading list, but I strongly doubt whether this is a realistic objective. In effect, while it would not be inconceivable to construct a bilingual or even polyglot list of subject headings or descriptors in one given field - here the Canadian one - it is unthinkable to do the same thing for the whole of human knowledge. The spirit of the languages involved is against it, as the team which attempted this for a number of years at the Library of Parliament and was forced to abandon the project as a losing battle could attest. I see then only one remaining possibility: the establishment and maintaining of the list in each language and its handling by computer to accelerate updating and publication of editions. The Library of Congress is naturally concerned with the English list; it has converted it to MARC II format and sells it on 7 or 9 track magnetic tape. The Laval list now has an audience throughout the French-speaking world and since 1964 is regularly updated by a computer program. I propose then that the National Library of Canada take steps to come to an agreement with Laval University to declare the Laval list the official French one and to establish a permanent committee of revision and updating, after having taken the advice of a group of at least five experts to determine the precise orientation of the work of the permanent committee.

As well, another long term aim and one more easily realizable would be the establishment, for each general list, of correlations between subject headings and classification codes (L.C., Dewey, U.D.C.). The possibilities of computer manipulations by subjects and by symbols of the various classifications might bring us closer to the ideal of a general bilingual list.

Note: For bibliography, see original paper, p. 9-10

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

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Standardization for input and retrieval in an automated system

by

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STANDARDIZATION OF INPUT AND RETRIEVAL IN AN AUTOMATED SYSTEM*

by

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This discussion of standards is set in the context of automating the National Union Catalogue, and consideration is given mainly to the mechanical aspects of input and retrieval, in contrast with the content of bibliographic information which is dealt with separately in other sessions.

Several conditions are assumed: that the National Union Catalogue is conceptually a collection of bibliographic information from a number of participating libraries, that some of the participating libraries are involved with the generation and transmission of the bibliographic information in machine readable form, that there are now and will continue to be differences in cataloguing practice and in equipment used at the various libraries.

To begin the discussion of input, an essential requirement for representing bibliographic information in machine readable form is that the information recorded will have format and structure: format being the 'code' used to identify the various elements of information and to represent the content of data, structure being the physical and logical method of applying the format. The structure and format would also be standardized to a considerable degree.

This requirement is largely resolved by the MARC II Communications Format, which has been accepted as a standard, although it is incomplete in regard to format specifications. The structure is will defined however, and appears to have the attributes of providing a flexible framework for representing bibliographic data in virtually any defined format. The format specifications at present available are: the format for Monographs in the Roman alphabet, and a proposed format for Serials. Other formats will be issued and accepted as standards as they are developed, but this will very likely require a considerable amount of time.

Given a standard structure and defined formats, the task of collecting information from a variety of sources, with varying standards as well as deviations within those standards, remains a very significant problem if the objective is to obtain either a reconciliation of the differences in practice, or a fully standardized catalogue.

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* National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No 6.

The objective of obtaining a standardized catalogue in this context does not seem feasible. The implications of revising information and practices to conform to a single standard, is immense: massive funding would be required and the results would not necessarily improve the system, limited resources are already reflected in the difficulty of building and maintaining catalogues let alone revising them. In reality this would be a very unattractive alternative, introducing disruption for many Canadians.

The alternative, of reconciling the differences, appears to be more feasible. This would not provide an escape from costs or disruption, but would hopefully minimize the problem.

It doesn't seem reasonable however that any one solution will resolve all the problems of input, or retrieval, whether the problem arises out of differences by ommission or differences in conflict of practice or theory. The alternatives can be considered in three groups:

a. those differences that are resolved by manual methods and require human judgement or interpretation.
b. those differences that are left unresolved because they are considered to be either non-essential or not economically feasible at the present time.
c. those differences that are resolved by using computers or other devices in combination with intellectual systems, including the differences that by speculation, can be resolved this way in the future.

Of these, the latter appears to offer the most promise. For example; some differences may be resolved initially by exchanging information through the matching of LC card numbers, or main entries, or titles; some may be resolved or identified by using a software interface capable of reconciling synonymous terms, or assisting in the process of revising content and eliminating redundancy.

However, all three will absorb the solutions, because the solutions are bound to be based on compromise, and largely influenced by economics.

Up to this point, I have been considering the problems associated with input separately from retrieval. Initially there is perhaps no option to do otherwise, but the availability of a comprehensive information management system would have profound effects on the process of collecting and maintaining bibliographic data, as well as providing access and retrieval capabilities.

Ultimately, the two, input and retrieval, must be considered together, and perhaps should be considered concurrently, at least in terms of design of a retrieval and information management system. This would introduce a significant amount of speculation however because there is virtually no practical experience within the context of large catalogue systems to base the design of such a system.

A related activity, although relatively new, has been the development of commercial Data Management Systems, or File Management Systems, which has demonstrated the feasibility of using generalized software facilities for data management and information retrieval in a commercial data processing environment. The incentive for the development of these systems has been to reduce the proliferation and costs of 'custom' software where requirements are similar and a generalized approach is feasible. Retrieval capabilities in these systems have for the most part been 'bonus' benefits, although some of the packages have been designed specifically for their retrieval abilities. The significance of these developments for the library community is that the concept of all these packages has been to integrate files, and provide an easier-to-use facility for non-technical users; to a large extent a help-yourself approach. In addition, the 'data base' concept is considered by many in the field of computing to be an emerging concept of real importance and one that will likely be soon introduced to the many software systems provided.

Although this development has a great deal of significance for the problem of Library Information Systems, to my knowledge none of the available systems provide for the handling of variable fields and records; an essential requirement for bibliographic data. Further, most of the existing systems maintain files of information with only one basic 'organization', or one basic sequence. Alternative access is generally provided by sequential searches, which is not practicable for large information files.

I am personally convinced that there is an immediate need for the design and development of a Library Data Management System, particularly for use with the conversion and development of machine readable catalogues. And that many of the problems associated with the input and retrieval of information would be vastly reduced and in many cases removed. However, to place this in perspective, it is representative of a number of complex and costly requirements, and like the conversion of catalogues will not appear overnight. I believe it is one of the major requirements however, and one that should not be put off; the process of converting catalogue files has already started and is likely to be accelerated, but no start has yet been made on the facility to handle all the catalogue data.

To summarize some specifics from the above vague and brief discourse on the problems of input and retrieval in an automated catalogue, I believe the following is required;

a. the MARC II communications format (structure) should be adopted as a processing format for the National Union Catalogue. There will likely be a need to consider some modifications to the physical and logical storage requirements, but the structure of 'tags', 'indicators', 'sub-field codes', and the other structural conventions should be preserved.

b. the available MARC II format specifications for monographs should be adopted as a standard for the National Union Catalogue, and the code should not be violated unless it can be explicitly determined that the content is not to the standard, otherwise unique local codes should be used or special indicators applied.

c. format specifications need to be determined and agreed upon, to enable the conversion of information not covered by the published and accepted standards.

d. character set standards as set out in the MARC II specifications, of the U.S.A.S.I., be applied to the National Union Catalogue.

e. solutions for resolving differences and revisions to be applied manually must be determined before data conversions are accelerated.

f. specifications for the design of a Library Data Management System should be undertaken as part of the program-plan for the development of an automated National Union Catalogue.

g. the design, conversion, and implementation of the NUC must be sensitive to the needs of the participating libraries, technically and financially, and the reverse is equally required, that individual libraries plans must be responsive to the developments at the National Library.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

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Standardization for serials

by

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STANDARDIZATION FOR SERIALS*

by

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I would like to preface my remarks with the warning that all of the following is generalized from my experiences in a large science library.

Why standardize? The answer, of course, is for convenience and economy. I am going to consider these points separately and hopefully bring them together amicably at the end of this talk.

Convenience to the user. The user, any user, wants to find information in as straightforward a manner as possible. But what is he looking for? In a scientific library, and I would assume any research library, by far the largest number of requests for serials are based on citations in other serials, in books, or from the various SDI printouts. In most cases the user takes the citation and, perhaps with the help of a librarian, decodes it into the title of a serial. The question of incorrect decoding is a serious problem, which I will refer to later. A finding list of titles showing locations and holdings will fill practically all of this user's needs. The remainder could probably be filled from such standard reference sources as Canadiana and the National Union Catalogue.

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* National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai 1970. Conference Paper/Document de la conférence No. 7

Convenience to the librarian. In most cases the librarian is a user as described above. From time to time other approaches may be necessary. However these approaches should be covered by a national service such as *Canadiana* as soon as we can identify our needs. This would avoid much duplication of effort on the local scene but presupposes adequate staff and funding on the national scene.

Requirements for cataloguing of serials. From the above it must be obvious that I favour minimal local cataloguing for periodicals and serials. But just how minimal is minimal? A finding list must have access by title, chosen according to some agreed ruling. Cross references from variant titles would often prove useful. For non-distinctive titles, and perhaps other titles, corporate entries would be necessary. Volume numbering and dates are also essential. But subjects? - I wonder. I will come back to this point later.

Requirements for union lists. Any union list, or union catalogue must reduce the number of entry points to a minimum, which requires consistency of main entry. My knowledge of the properties of computer storage is not adequate to speculate on the relative merits of

1) storing all data under its earliest title, with cross references from later titles,

2) storing all data under its latest title, with cross references from earlier titles,

or 3) storing all data under its current title, but I will point out that there should be another alternative in the near future. Just as the Standard book numbering system was developed for books and has proved so successful that it is now being extended internationally, a Standard serial numbering system is being investigated by UNESCO and, I am sure, will prove just as successful. Such a system will solve the problem of entry for union lists, and in a number of other places to be mentioned later.

Every union list must show locations and holdings. Other useful information would deal with the lending policies of the participants, which could very well be dependent on the title involved, and it would also be very nice to know that a particular volume is available and has not just been sent to be bound. Of course that is impractical in published lists, but would not necessarily be so in a computerized national data bank.

Requirements for subject analysis. For periodical and serial sets, as distinct from index or analytical entries, there seems to be little justification for subject analysis using, for example, Library of Congress subject headings The alphabetic character of these headings scatters similar subjects so widely that they are virtually useless for dealing with such relatively simple questions as "What serials do you have dealing with mathematics". At N.S.L. when we are producing subject listings of periodicals we use the classification numbers because of the practical difficulty of locating all the related subject headings. However subject analysis by a numerative system such as the Universal decimal classification system could prove very useful for producing lists such as the one described.

Requirements for classification and/or shelf arrangement.

As indicated above we classify our serials at N.S.L. For the past few years we have been using closer classification than is strictly allowable in the schedules. By that I mean that a serial dealing with a limited subject area would be given a classification number corresponding to that area, even although LC would use a more general number for a serial dealing with that subject. I should perhaps interject at this point that practically all the serial cataloguing we do is original cataloguing. Thus we are not adapting L.C.'s cataloguing here - it simply isn't available when we need it.

The rationale behind this close classification was that it permitted serials dealing with limited subject areas to stand together on the shelves, and that lists of periodicals on limited subject areas would be easier to produce. Unfortunately we have never had enough staff to convert all our older serials to this system, and many of the serials are on such limited subject areas that they are very lonely.

The other extreme is just shelving the serials alphabetically by main entry. This works well for small collections, but increasing size makes for difficulties in maintaining alphabetical order - we are not shuffling a few cards but several feet of heavy volumes. We have this problem with our collection of slavic serials, which are classified but have been kept in alphabetic sequence until such time as we move into our new building. I am sure they would have long since been integrated with the other serials if we had known how long that was going to take.

Requirements for index and analytical entries. So far I have been discussing serial sets. The requirements for index and analytical entries are quite different, being very similar to these for monographs. In this case the item being described is normally completely at hand, so the description can be more definite than is possible with open entry serials. Minimum entry points would include author and title, and the identifying information would include the serial title, volume numbering, date and inclusive paging.

Economy At the beginning I said that standardization was for convenience and economy. So far I have been listing what might be termed the minimum requirements for the convenience of the user. As I suggested earlier the user with more than these minimum requirements could be served by Canadiana, or the National Union Catalog. If there are any requirements not covered by such sources, it would seem to me obvious that these should be met by one library and made available to all. It does not seem justifiable for a number of libraries to each repeat the operation. This assumes that these libraries can accept each others' products completely, which brings us to cataloguing rules and variant local practices.

The simultaneous existence of two versions of the Anglo-American cataloguing rules together with superimposition makes interchangeability difficult. The varying interpretations that can be put on some of the rules makes it even more difficult. According to Mr. Coward of the British National Bibliography, the French and the Germans are going to start exchanging data in the MARC exchange format but based on the Paris principles. This is going to make international interchangeability even more difficult.

However all is not yet lost. Use of the Standard serial numbers would ensure that all listings were arranged in the same way. Indexes would be required, but why not permuted indexes? This would solve many of the problems caused by the differing codes, interpretations and superimpositions. If citations also used the standard serial number, and they were transcribed correctly by the requester, most of the problems of our interlibrary loan section would be over.

SUMMARY

To summarize, I feel that cataloguing of serials is an expensive luxury. Finding lists, supplemented by such aids as Canadiana, are sufficient. To those who would comment that these aids offer too little, I would answer that we are in a good place for a sit-in. It is more economical to arrange for speedier and more complete national services allowing individual libraries to concentrate on their immediate needs.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE
SUR LA NORMALISATION DU CATALOGAGE

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Standardization for government publications

by

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STANDARDIZATION FOR GOVERNMENT PUBLICATIONS*

by

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In discussing standardization for the handling of government publications, several questions can be asked - questions which should lead to the identification of problems which must be faced if standardization is to be considered. The first of these questions concerns the total holdings of government publications in a particular library:

> Is there any justification for treating government publications as a separate collection rather than integrating them, through the catalogue and classification, with the total collection of the library?

Arguments in favour of the separate collection were investigated in detail in an earlier report.[1] The problems of the non-separate collection have been succinctly summarized by Norman Clarke as follows:

> "The factors of increasing volume and diversity, combined with variables such as the expanded employment of deposit as a system for the distribution and acquisition of government publications, the almost continuous rise of cataloguing costs at a time when the effectiveness of traditional library concepts of the catalogue is being seriously challenged, and the growth, increasing sophistication and availability of centrally published indexes to government publications have led many librarians to question, at least partially, the applicability of traditional library cataloguing, classification and storage methodology as the organizational solution to the body of government documentation."[2]

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*National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai, 1970. Conference Paper/Document de la conférence No 8

When you add to these considerations the preference for a separate collection, arranged by issuing body, stated by most faculty members and research workers, the conclusion would appear to justify the separate collection.[3,4,5]

However, the establishment of a separate collection does not, in itself, solve the problem of access to that collection, either within the individual library, or within a regional, national or international network. This is because, at present, most libraries arrange their government collection by issuing body, and depend on printed indexes to analyse the contents of the collection. Often the notation scheme of the index is used to arrange the titles on the shelves. Several questions can be asked in this context:

- What happens to those publications which are not indexed?
- Are the indexes themselves adequate and timely?
- Is the user well served by a variety of arrangements - or 'non-arrangements' within a homogenous collection?
- How can we provide access, in Canada, for users of a national system, to the total collection of government publications held in libraries accross the country?

It would appear, therefore that we have two problems.

1. To provide complete access to the collections within each library.

2. To link those collections into a device which would provide access to everyone in Canada.

A standardized Union List would appear to offer the best solution. Before we retreat before the prospect of expensive MARC II format cataloguing for all government titles held in Canada, an analysis of the actual requirements of such a list should be made. The inclusion of the following data elements is obvious:

- corporate author(s) associated with a document
- personal author(s) associated with a document
- title(s)
- serial or series title(s)
- date of publication
- report, contract, or document number(s) from the issuing body(ies)

Equally obvious is the omission of that major element of traditional cataloguing - the subject.

Is a subject approach necessary for government documents?

Without suggesting that subject retrieval should not be part of the document system, a new approach, making use of machine capabilities is worth consideration. Title relevancy studies in several areas show satisfactory results as high as 89 per cent. Using key-word-in-context (KWIC) manipulation by the computer, subject retrieval can be available for all relevant titles, without the expense of human analysis.

A union list with only the basic data elements already described is a relatively simple index. The key to such a list would have to be a document number or code. This notation scheme would have to embrace all the documents in the file, so that the various numbering systems used by several issuing bodies could not be used.

Two major problems still exist:

1. How could a union list of government publications be established without standardization of entry and document code?
2. Since the cataloguing of government publications can be the most difficult a library has to fare, how could standardization be imposed?

A two level approach to the problem is suggested.

1. A system should be designed which, in effect,

desregards the 'sacredness' of the main entry, obviating the problem of standardization to a large extent.

In cataloguing or listing a government publication, all that needs to be identified about an issuing body or a personal author is that it is associated with a particular work. The choice of which (of several corporate or personal authors) is the 'main' entry need not be made. Even the form of entry can be reduced to secondary importance if the idea can be accepted that relationship to a work is all that need be shown. Tags or codes within a machine system can identify this relationship, and display it in whatever format is selected. (e.g. cards, book catalogues, etc.)

Having suggested, therefore, that we achieve standardization by effectively ignoring it in the area of choice or form of entry, the exact opposite is indicated for the document code. This, in fact, is the basis for the entire system, and understanding of this fact, as well as adherence to it, is necessary. This uniformity could be achieved through the second approach to standardization which is being suggested:

2. A Committee of experts should be appointed from accross Canada, who would develop an acceptable document code for all government publications received in Canada. In addition, this Committee could assign responsibility for certain blocks of publications to a particular library, avoiding the duplication of indexing or cataloguing now prevalent. This Committee could meet once every two months, and make decisions on problems identified by librarians participating in the network.

Very briefly, this paper has presented, as a background for more questions and discussion, a suggestion for a system for handling government publications in a standardized format, without depending on traditional cataloguing of all such titles. Included in such a system would have to be acceptance of several ideas which are non-traditional for libraries, but which are fundamental to it.

1. A separate system for the organization of government publications.
2. De-emphasis of the importance of the 'main' entry.
3. Dependence on a computer based system for the display of the various data elements which are associated with a document.
4. Subject analysis through a key-word-in context system.
5. Development of a document code which would be the method of identifying the individual document as well as being the key to the file.
6. Establishment of a Committee for Standardization of Government Publication Cataloguing, which would meet to develop the document code as well as to assign cataloguing or coding responsibility for specific areas.

References

1. Beckman, Margaret. Documentation system for the organization of government publications within a university library. University of Guelph. Research report No.2. 1969.

2. Clarke, Norman F. "Cataloging, classification and storage of government publications when incorporated into the general library collection," Library trends, v. 15 (July, 1966), p. 59.

3. Low, Edmon, "Government publications at Oklahoma A. & M.," Serial slants, v. 7 (1956), p. 18.

4. Caldwell, George, "University libraries and government publications: a survey," College and research libraries, v. 22 (January, 1961), pp. 31.

5. Beckman, op. cit. p. 7.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

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The means of achieving standardization

by

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THE MEANS OF ACHIEVING STANDARDIZATION*

by

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By the time we have reached this point in the Conference, much of what I propose to present may already have been mentioned by previous speakers and in discussion, and I ask your indulgence for duplication which may now seem unnecessary. However, some of the suggestions may bear repeating, and some, perhaps, may be new and may contribute usefully to the enterprise in which we are engaged.

The position of this paper in the agenda for the Conference, as well as title which was assigned, suggest that, finally, we shall have the answers to our problems. This is unlikely to be the case. There are some possibilities, suggestions, speculations and questions, but certainly I do not presume to have the answers. Much is not even new. The mere existence of cataloguing is itself already a form of standardization, and our topic is at least as old as the catalogue at Edfu.

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*National Conference on Cataloguing Standards/Conférence nationale sur la normalisation du catalogage, National Library of Canada/Bibliothèque nationale du Canada, May 19-20 mai, 1970. Conference Paper/Document de la conférence No 9

**The opinions expressed are those of the author, and do not necessarily represent those of the Ontario Universities Bibliographic Centre Project or its sponsoring bodies

I am largely omitting consideration of the means of achieving standardization which involve computers or other contemporary technology. The accuracy and consistency for computer applications are in themselves a compelling impetus towards the development of standardization, but the standards we are seeking should be valid regardless of the tools we may have to implement them.

Means for achieving standardization may be divided into two types: intangibles, or principles of standardization in general, and the methods of library implementation from which we must attempt to select those which most effectively serve our aims. I shall begin with some principles, and then comment on some methods.

Some Suggested Principles for Library Standards

Standardization must fill a need. Standards established in industry and engineering are created to help commercial profit, and because a given industry can no longer support a multitude of variations which are not viable in the business world. The luxury of the custom-built is one which few can any longer afford. Libraries may be non-profit institutions, but they are nonetheless subject to the financial exigencies of the economy and must produce a "return." This "return" is, quite simply, the conservation of knowledge and its effective retrieval as required. This is not being adequately achieved at present, and libraries have a need for standards for their kind of "profit" quite as much as business or industry for theirs.

The usual failure to consider libraries in economic terms has another relevant implication. The rarely-used book does not amortize the investment made in its purchase, processing and storage. If the application of standards can make this book known and more readily available to a library's own clientele and to the library and research community generally, the economics of the situation become considerably more viable.

Needs probably vary less from library to library than do librarians' responses to meeting them. Demands made on libraries, and consequently the requirements for serving these, tend to vary more by type of demand and by type of user, both of which can appear in a wide variety of libraries. Libraries may not be as different in as many ways as is sometimes supposed; needs may be more similar than one might first suspect.

It is important to have generalized standards in which variation can occur. There must be flexibility and the ability to accept information from a variety of sources. At the same time, some library materials may never fit a standard, and rather than overly modify or abandon a standard, an "escape code" must be provided for the inevitable eccentricities.

There should be concentration on what is possible, not on an impractical perfection. Standards can be no more perfect than those who make them, and it is important to achieve something that "works," rather than be frozen by the fear of permanence or defeated by an unrealistic ideal. Others will follow and improve on what it may be possible to do now.

There is also a group of principles which it may be well to keep in mind: "diminishing return," "calculated risk," "margin of error," "accuracy of plus-or-minus 'x' per cent," "false drop," and the like. If one is searching for an item in a multi-million volume collection, and actually gets two or three as a result of the search, how much is it worth to sharpen the standard and move to a higher level of sophistication to make the standard "perfect"?

Arriving at standards involves a willingness to compromise as alternatives are evaluated. In current terms, "What is the trade-off?" "If I give this up, what can I have in return?" And it is well to face the sometimes chilling fact that, in certain instances, there may be no realistic alternative in sight.

It is irresponsible to abandon or change current practices without good reason, but it is also necessary to accept the realization that in some cases it may be necessary to make a clean break and start over. We may hope that the future is longer than the past.

It is desirable to concentrate on the least and the simplest, since here is usually the greatest chance for agreement. Elaborations can often be added by the fewer users who may need them, and agreement on basic elements obviously diminishes the areas of difference which remain to be worked out. In addition, it is unlikely that all can be done at once. It is important to divide the project into its parts and to develop and introduce standards as they can be completed; some may evolve easily, others we may not see in our lifetime.

Cost and technology obviously cannot be ignored, but valid principles, uses and methods come first. Money and the required technology will come more readily if standards and plans are sound.

Finally, it is essential to re-examine the fundamental structure of our bibliographic services to determine to what extent traditional and existing methods are valid. While it may be impractical to wait indefinitely for research studies to provide all the information needed for decisions, it is unwise to standardize existing procedures when they can be supplanted by something more effective, or even eliminated.

Before commenting on a variety of methods which may contribute to standardization, I should like to express one general, overriding opinion which should be kept in mind in considering the practicality of the suggestions in the remainder of this paper. Most bibliographic data conforming to a standard, regardless of its source, has not been and perhaps may never be available rapidly enough to permit prompt use of the material which it represents. The existing cataloguing backlogs in most libraries are visible proof that this is true when the standard has been used locally, and there probably is no centralized or cooperative service which has not been criticized in terms of speed.

It is entirely probable that an intermediate stage must be provided regularly so that material can be available for use, as soon as it is received, under some form of provisional control which can later be replaced by the standard bibliographic data required for a permanent record. One of the numerous possible functions of the Standard Book Number may well be that of linking these temporary and permanent records.

Certainly a large number of libraries have developed a wide variety of temporary records. The crucial distinction is that, by and large, these have been concessions set up in response to a need to go faster and faster to stay in the same place, rather than full acknowledgment of an intermediate or provisional stage as a regular element of service. Effective provision for such service can remove certain immediate pressures and allow more reasoned use of bibliographic standards.

A Single Cataloguing Code

If a single code is possible, there can be little doubt but that the Anglo-American Cataloging Rules[1] are the point of departure. I avoid suggesting that the AACR is the single code which can be adopted, because, as it presently stands, certain serious flaws should be corrected. It should be revised to remove the inconsistencies which were insisted upon by the Library of Congress and the Association of Research Libraries, an attempt should be made to reconcile the differences between the North American and the British editions, and efforts should be made to assure that the AACR is consistent with the so-called Paris Principles[2] as these are revised internationally.

For the general purposes of this conference and, certainly, for any serious consideration of code revision, it is well to go back to Lubetzky's Cataloging Rules and Principles[3] and his draft Code of Cataloging Rules,[4] as well as to the statement of principles from the Paris IFLA conference. These basic texts have tended to recede into the background with the publication of the AACR, but the soundness of Lubetzky's thinking, in particular, merits careful re-examination.

To be sure, few who worked on code revision during the fifties and sixties are likely to be enthusiastic about taking up the matter again so soon. However, the AACR did not clarify standards to the extent many would have wished. The general framework of the code already is ten years old and, in the meantime, MARC, Shared Cataloging and considerable international agreement through IFLA all have carried the possibility of an international standard much further than might have been imagined a decade ago. If the work begun by this meeting goes forward as anticipated, it might well be that a second international conference on cataloguing standards should be called, perhaps on Canadian initiative, and it may not be too presumptuous to think of a set of "Ottawa Principles" replacing those pioneered by the Paris Conference.

From the IFLA International Meeting of Cataloguing Experts in Copenhagen last year has come one of the major break-throughs in developing a standard cataloguing code: "It was agreed that in order to advance international uniformity, the commentary should encourage the use wherever possible of the original form of names and titles, rather than the form used in the language of the country in which the library is located."[5] Important as this can be for libraries in any country, it is unusually valuable for those countries, such as Canada, which use more than one language.

General adoption of this principle could open the door to possibilities for the international exchange of data in forms which could be used in systems of bibliographic control throughout the world. Consider the impact in Canada, for example, of tapes in MARC format from the Bibliothèque nationale in Paris, and the possibility of ameliorating the problem of cataloguing in Cyrillic by using catalogue cards from the U.S.S.R.

Most names in our catalogues already are in their original language; the use of the local rather than the original form is limited almost entirely to names of political jurisdictions, and even here the vernacular usually is used for subdivisions within the jurisdiction. We now have cross references from the original to the English or French forms; why not reverse the practice? It might seem strange to have "Spain" under "España" in the "E's," but would this not be better than having Spanish-language books uncatalogued in a backlog? Using a title in its original form already is generally prevalent and, although its use by LC and other libraries is irregular, the AACR provides for uniform titles for translations.

Mention should also be made of the recurring suggestion of main entry under title as the principle for choice of entry. Although this possibility usually is dismissed in concern over the concentration of entries which would cluster at words such as "report," "journal," "history of" and the like, it is well to remember that despite the problems engendered by the frequency of titles beginning with certain words, the title is often the most easily recognized and most stable of all the elements in an entry.

The possibility of multi-lingual cataloguing data brings the need to consider the validity of catalogues organized by language. A growing interest in area studies in some academic institutions, for example, makes arrangement of a catalogue by language more relevant than might first seem.

Attractive as multi-lingual cataloguing may be in certain of its identifying and descriptive aspects, subject headings would need to be converted to local systems, and classifications assigned elsewhere are unlikely to be compatible. Canada will need to consider whether or not the bilingual use of bibliographic data will require a standard for items such as a "Title translated:" note.

Decisions must be reached on whether uniform format and typography are needed. Catalogue cards throughout the world more and more resemble those issued by the Library of Congress; there is much wider variation in the formats used for catalogue entries in book form. Typography varies greatly. One of the most recent steps towards standardization in this area is the ALA approval of a character set to be used on computer-driven impact printers;[6] at least one manufacturer has begun designs for a computer type face for this character set, which may in turn also become a standard. These considerations of format and typography go well beyond legibility and esthetics. Optical scanning and format recognition both are developing, and both require much greater standardization for full effectiveness.

It is an open question whether a single code can or should be attempted. The AACR is already, in effect, a collection of several codes applicable to different types of library materials. What may be more realistic is to extend this principle of a "collection" somewhat more frankly. Should maps, for example, be entered under responsible author rather than area covered, as is the case in many map collections? Most of our codes have suffered from the tyranny of the dictionary catalogue, and it may be more realistic to design for differing catalogues for a variety of purposes. There probably is no library of any size in Canada which even now has "everything" in a single catalogue, and it might be far better to recognize the usefulness of logically organized multiple catalogues than attempt to force all library materials into a single unresponsive tool.

While there seems little doubt that a better code, or codes, could be developed, with more logic and consistency than at present, the crucial problem is probably not the code itself but its application. Central cataloguing sources of all kinds will provide an increasing amount of bibliographic data in standard forms, but there will remain a residue which is not covered, and there will remain the libraries which cannot reasonably have access to the standardized product. The central source itself is subject to inconsistency and error, even under the best of circumstances; training and editing are enormous problems. Even so, these possible flaws should not deter an attempt to achieve as much as possible.

A Single Classification System

Description and identification of publications, despite the attendant problems, are far simpler than their classification. No one needs to review the history of classification to be reminded that attempts have been made for centuries to organize knowledge and no substantial agreement has yet been reached. A single classification system appears even more remote than a single cataloguing code.

For the purposes of achieving standards, it is essential to bear in mind the two principal functions of library classification: 1) to provide for the symbolic organization of knowledge (the class number), and 2) to provide for the physical location and control of the item to which the classification is attached (the call number). Combining the two successfully, as most libraries have tried to do, is probably impossible.

It seems probable that sheer bulk of publication may cause the gradual abandonment of classified shelf arrangement for most large collections. If publications are kept in their original form, exigencies of space will force libraries to adopt more economical means of storage. As an example, the Library of Congress has for some years been planning its third large building, but it is not inconceivable that it will be ready for the fourth before the third is open. One has only to look at the growth patterns of Canadian academic libraries to see the same problem on another scale. On the other hand, if publications are converted from their original form into whatever "micro" device technology may provide, the point of most classified shelf arrangement may disappear completely.

Rather than a call number as we normally use it now, probably there will be a code of some type which will represent the physical location of an item and which will be used to control the item's use in a circulation system. This, of course, is no more than the kind of "size-plus-accession-order" code which already is in use in a number of storage collections; the difference is simply that it would be used for the majority of a collection rather than only for a selected portion.

Although general classification covering the full range of knowledge, such as LC and Dewey, will probably continue for shelf arrangement in smaller libraries (including undergraduate and browsing collections), the use of specialized classification schemes probably will increase for subject approaches in larger collections. These schemes may be quite unrelated, either to each other or to LC or Dewey, and are likely to be developed by groups combining librarians, subject specialists and computer technicians in a manner designed to capitalize on computer technology - but which may or may not be used for shelf arrangement.

This type of specialized scheme can be illustrated by the Canadian "F" and "PS" variations on the LC schedules. These use the LC style of notation and, as yet, do not conflict with LC's own use of numbers, but another notation could as easily have been used. As with the Dewey and LC classifications, specialized schemes require provision for regular up-dating, revision and application if they are to be maintained as standards.

These specialized subject approaches probably will result in classed catalogues, arranged by these schemes, with indexes, in Canada, from subject headings in English and French. Cards representing library materials may be classed by as many numbers or different classifications as may be appropriate, and then keyed to the arbitrary code which actually locates and controls the item physically. This already is beginning to appear on current LC cards in medicine; the cards carry Dewey, LC and National Library of Medicine classifications, and the library which chooses to can shelve by an arbitrary code number.

A further possibility bears examining. Subject access to journal and technical report literature depends largely on published indexes. Is it feasible to do the same for books? More skilled and detailed analysis at more reasonable cost might be done on a national or international basis. There seems little likelihood, or even desirability, of attempting a national or international standard for a local call number. As for classification, a single national or international scheme seems unrealistic. If a "system" is meant, instead of a "scheme," eventually we may be able to achieve a cohesive group. In the meantime, whatever local call numbers may be used, the Dewey and LC classifications on LC cards and MARC can be kept intact, as assigned, for use as a subject approach until something more suitable may replace them.

Dependence on Library of Congress Cataloguing

Probably no other institution has had an influence on libraries equal to that of the Library of Congress, and the profession and those it serves are greatly indebted. It is only fair, however, to note that the immense dependence on LC, often deliberately built up by those libraries which benefit therefrom, also carries with it certain disadvantages. LC itself often has pointed this out, as in the period since World War II when large numbers of libraries adopted the LC classification, which LC frequently cautioned had been designed only for its own collection and not for general use.

Because of its huge size and substantial financial support and because of the momentum of existing bibliographic activities, it seems probable that LC will continue to play a major role in the establishment and maintenance of principles, standards and policies. Since a commitment to LC already is an integral part of the policies and operations of the majority of libraries in North America, at least, this dependence on LC will continue and may increase. The simple reason is that the gains far outweigh the disadvantages, and perhaps there is less shame in dependence when it works to one's own advantage. Several factors, however, indicate that there may be changes in the nature of LC's role vis-a-vis other libraries.

During the past several decades, there has been a growing trend for LC to become, not only the library for the U.S. Congress, but the national library for the United States, reflecting to a greater and greater degree the needs of the library community generally as well as its own. It also has been increasingly active in various types of international cooperation. The LC staff are unusually responsive to suggestions which come from the profession. The Council on Library Resources on numerous occasions has supported financially studies and projects to be conducted by the Library of Congress but of import to libraries generally. In short, national and international influence on LC has been increasing substantially, and no doubt will continue.

The existence of millions of LC cards in various printed forms frequently has been a major obstacle to basic changes of any magnitude. Among other things, this imposed concessions in the formulation of the AACR and resulted in the subsequent confusion of LC's policy of superimposition. Although existing LC cataloguing remains a formidable barrier to considerations for change, LC has announced that it is considering the feasibility of stopping its cards and catalogues at some date to be determined, and resuming these services under revised principles and criteria. A prospective break in the continuity of LC cataloguing policies immediately opens up the possibility of introducing dramatic improvement in all aspects of cataloguing standards. If this should materialize, it will be an opportunity which has never been available before, and one of such importance that librarians should offer all possible professional assistance in determining the revised principles and standards which might be introduced.

Although dependence on LC policies no doubt will continue for the foreseeable future, it is quite possible that reliance on specific LC services may diminish somewhat. Mention has been made of the growing importance of national bibliographic services to libraries in countries other than their own. The probability that an increasing amount of cataloguing will come from the country of origin means that dependence on a given national agency such as the Library of Congress will more and more become a factor of the percentage of publications which a library acquires from that country. Consequently, in Canada, reliance on LC will decrease as more becomes available from Great Britain, France, and others. In turn, Canada, of course, should be expected to provide bibliographic data internationally for publications originating here.

Despite the amazing increase in LC cataloguing in recent years, it seems improbable that LC will ever be able to catalogue "everything." It is much more than a question of efficient card and MARC services, which no doubt will improve. Cataloguing the world's publishing in hundreds of languages is more than any single institution can realistically be expected to undertake. LC has attempted very commendably a job which was not being done elsewhere; it may shortly be time to share the responsibility among at least the major publishing nations.

If there is to be this interdependence in supply and use of bibliographic data, an important question is the influence which Canada should and can have on what is done elsewhere. What contribution and support can come from this country as one of the major customers of other national services?

Cataloguing-in-Source

Cataloguing data printed as an integral part of a publication has tantalized librarians for a number of years. A variety of methods has been tried by several countries, probably most successfully in the U.S.S.R. where publication is considerably more controlled than elsewhere. More familiar is the experiment conducted in the late fifties by the Library of Congress, and subsequently abandoned.

LC is again working with the American Book Publishers' Council and the Council on Library Resources on the possibility of re-introducing "cataloguing-in-source," this time renamed "cataloguing-in-publication." The present effort would supply cataloguing information, but somewhat short of completeness and probably not in the format of an LC catalogue card. "At this stage the cataloging information...would consist of: main entry heading, title, bibliographical notes, subject entries, added entries (includes series added entries), LC call number, DC number, LC card number."[7] "The emphasis in the data supplied would be on the intellectual elements involved...(and) libraries could fill in...imprint and date from the title page and ascertain for themselves the collation."[8]

A representative of LC states that "the project hinges mainly on two questions: 1) will libraries actually undertake to make their own catalog entries from the cataloging information supplied in the books as opposed to continuing to procure cards from their present sources, and 2) can the money be found to get the program properly launched (presumably from foundation sources) and to sustain it as an on-going operation? If the answers to these questions are favorable, it seems that we could proceed. The reactions of publishers, though not yet known in detail, are thought likely to be favorable."[7]

Few librarians would reject sound cataloguing data wherever it may reasonably be found, and the smaller the library (or the more a library's acquisitions correspond to current American trade publishing) the more useful "cataloguing-in-publication" would be. Since these are considerations not to be dismissed lightly, the project at LC should be encouraged. Even if only part of the cataloguing problem can be helped, that much is welcome.

However, certain aspects of the general principle need to be examined further. Bibliographic data printed in a publication is permanent at least until the next revision of the book. If the book is not revised, and probably most are not, elements such as the entry, the subject headings and the classifications remain unchanged and perpetuate an increasing degree of obsolescence into the indefinite future; in time, this can even become erroneous information. Incomplete and unformatted data obviously require somewhat more effort from the local library than would the receipt of cards or formatted information in the book which could be reproduced directly as a set of cards.

Taking the idea beyond its possible application by LC, there is the practical improbability of cataloguing-in-source from more than the trade publishers in the major publishing countries. There have been suggestions of cataloguing-in-source for government documents, largely because of the possibility of close association between document publishing and a national library. However, since government documents have often been among the least well organized publications in many countries, is it realistic to expect that cataloguing-in-source could be introduced successfully?

Despite these reservations, the concept should not be dismissed, but considered as a useful possibility in the instances where it can be applied. However, a variation of the principle may be worth further study.

The close relationship of cataloguing-in-source to various cards-with-book services is obvious. Would it not be feasible to vary the cards-with-book idea, and supply with the book not the cataloguing data as a part of the book itself but as a "temporary slip" which could be used until complete standard bibliographic data are available? This temporary slip could be the traditional 3x5 format, but could also be a standardized punched paper tape for computer applications, or both. In the book itself, instead of the bibliographic data, would be a symbol indicating that full cataloguing information was available from the national cataloguing centre in the country of origin. Libraries which could use the temporary record for all their purposes would be served as well as by data printed in the book; others would be subscribing to national services from which the full data would be available; the printed symbol signifying data availability would remain in the book indefinitely for future use and permit continuing revision of the data as time passed. Should this suggestion seem unrealistic, substitute "LC card number" for the word "symbol" and it is immediately apparent that a large part of this system already is operating at LC.

Cooperative and Shared Catalóguing

The distinctions between cooperative and shared cataloguing are blurred, except as the latter term is capitalized to signify the specific project being conducted under the auspices of the Library of Congress. What differences there may be rest largely in the administrative organization of particular projects, not in the basic concept of a division of professional expertise.

The history of cooperative cataloguing has not been particularly encouraging. In planning for the present Shared Cataloging Project at LC, for example, serious consideration was given to various possible cooperative arrangements, but the conclusion was that centralization at LC was essential. The two principal problems usually have been the difficulty of assuring a continuing responsibility for each of the parts into which the cataloguing may be divided and the almost universal need, or compulsion, to do over again the cataloguing which has been submitted.

Probably Shared Cataloging at LC should gradually evolve into an international plan for cooperative cataloguing, as national bibliographic services elsewhere are prepared to assume this kind of responsibility. Several countries are in a position to provide this now, through relatively minor adaptations of services already in existence. The inevitable editing will need to be done in each country for its own purposes, in any case, and given a reasonable international agreement on standards, libraries in other countries should be able to accept the bibliographic data thus provided. Depending on the type of subject analysis which evolves, each national bibliographic centre may require a service which translates subject headings in other languages to those of the receiving country.

Cooperative cataloguing on other than this national and international basis seems unlikely to succeed on any scale sufficiently large to offer genuine assistance.

It may be appropriate to mention here the desirability of exploring the means of communicating these data within and among countries, in particular the possibilities which may become available through advanced types of telecommunication. Together with this study should come another devoted to the possibility of national and international agreements on reduced rates for the communication of library information, as a logical extension of existing governmental support of educational and cultural activities.

Centralized Processing

The term "centralized processing" has been used loosely to cover the performance in one location for more than one library unit of some or all of the wide variety of services needed to make library material available for use. It exists in a single library system with branches, as well as for groups of libraries which may or may not have any other relationships; it is available commercially and through non-profit organizations established cooperatively for this specific purpose. Since a single library with branches may be assumed to establish and maintain its own choice of standards, and since commercial services respond to the standards requested by their customers, for the purposes of this discussion "centralized processing" will mean the provision by a cooperative organization of all or a major part of the acquisition, cataloguing and physical preparation of materials ready for use in the participating libraries.

Since the problems of establishing standards for such a cooperative enterprise do not differ at all in basic principle from establishing standards on a national or international level, and since it should be possible to apply standards, once established, more consistently in a single location, the question is whether or not centralized processing can be operated effectively.

The performance of existing centralized services has varied greatly, and most have been subject to considerable unfavourable criticism. As an example, Ontario's ONULP project of several years ago was in many ways a substantial achievement, but the participants know far better than I the detail of problems of which there still are remnants. A recent study of public library systems in the United States reports that although centralized processing ranks fourth among ten benefits attributed to cooperation, "the greatest disappointment of the affiliates has been the slowness of delivery of centrally acquisitioned books."[9]

"Whether library technical processing, as it is presently known, permits large-scale consolidation even under computer control is an open question and not beyond doubt."[10] This reasonable skepticism, recently expressed by a Canadian librarian, does not, however, preclude the fact that it may be possible. If there are, in fact, changes in principles and methods of operation which might make centralized processing a viable service, it is important to determine what these may be.

How large a volume of material can a centre process? The Association of New York Libraries for Technical Services has a design target or optimum of two and a half million volumes per year with a predicted service charge of not more than $1.40 per book;[11] for comparison, Canadian academic libraries added somewhat more than two million volumes during the year 1967/68.[12] What is the optimum number of participating libraries? How much variation among the requirements of libraries can a centre accept? What are the implications of geographic dispersal and the kinds of communications and transportation services among participants? How much variety in subject matter, language and type of material can a centre absorb? Can it process retrospective acquisitions as well as current? What is a realistic base for funding, particularly during an initial period before a centre can be expected to operate at its maximum effectiveness? How much money can a centre really "save" for its participants? Are there patterns of centralization and decentralization in business and industry which are applicable to libraries?

There are few of us who would not have opinions on all of these questions, but we lack sufficient documented information on which decisions can intelligently be based. There is much in the literature on centralized operations of various kinds, but a paucity of factual data against which a group of libraries of a region or a nation could compare its situation to determine the feasibility of such an enterprise.

Despite the criticism which has been levelled at centralized services, a number of librarians remain persuaded that important benefits are possible, and to a large number of the laymen by whom most librarians are employed centralized processing seems an obvious economy and the solution to a substantial number of library problems. Unless emotional opinions can be replaced by facts, either _pro_ or _con_, libraries face the grave risk of having centralized processing forced upon them whether they wish it or not.

The Role of the Canadian National Bibliography

Several suggestions already have been made emphasizing the increasingly important role of a national bibliographic centre such as the National Library. It seems clear that the keystone of the services to be developed is the Canadian national bibliography, *Canadiana*. It is here that one should find the full and complete bibliographic control of all Canadian publishing, and from this core the service then expands to provide coverage of material relating to Canada, the basis of the national union catalogue, and the bibliographic products such as catalogue cards, book catalogues of various types and machine-readable tapes for use in Canadian and other libraries.

Whatever selectivity may be decided upon for other purposes, it is in *Canadiana* where full bibliographic data must be provided, at least once. Whatever simplifications of standards may be desirable for other national services or for other libraries, it is here that a "complete" standard must be available from which a selection of needed elements can subsequently be made.

Canadiana is at present a collection of bibliographic tools, and it seems desirable to continue this pattern of a complementary group of catalogues and indexes which together would provide the needed coverage. Suggestions have been made that a national service should provide coverage in greater depth than heretofore; for example, in analyzing chapters in books, papers in symposia volumes, and the like. If this is indeed desirable and feasible, relationships with periodical indexes (where this type of analysis has been more customary) should be examined. Careful study needs to be given to the relationship of Canadiana to the catalogues of federal and provincial government documents, so that coverage can be as complete as possible, without unnecessary duplication.

Publication and cumulation patterns probably would differ among these various parts. In short, Canadiana should be considered as the complete bibliographic control for the country, with variation in its components according to the types of material included and the requirements relevant to each.

Not only for political, but for quite practical reasons, Canadiana must operate on a multi-lingual basis. Control in English for English-language publications and in French for French are self-evident; to what extent is it essential to have full control of each in the other language as well? Double sets of subject headings on printed cards, for example, are possible, if unwieldy; but the Vancouver Public Library is unlikely to use the French nor the Université Laval those in English. Must the National Library be able to provide a completely bi-lingual service? Furthermore, to the two principal languages must be added those of other ethnic groups in the country. What is the appropriate provision for the Ukranian, the Italian, the Greek published in Canada? In addition to services needed within the country, what language approaches are relevant if Canada is to exchange bibliographic data with other countries?

Computer-driven printing may possibly be the most expensive yet invented, but it can be a "way out" for the application of standards and for achieving the variety of services desirable for a multi-lingual country. If all the desired bibliographic elements are present, appropriate programming of the computer can manipulate these in a wide variety of ways and delete elements unwanted for certain purposes. Thus, for a price, a central source such as the National Library could prepare bibliographic output in almost any form or standard needed. It is obvious, however, that although this may be possible, careful evaluation of costs is imperative. In considering alternatives for solving the multi-lingual problem, it should be useful to investigate relevant services in Switzerland, Belgium, South Africa and other countries which must also deal with a similar situation.

Canadiana, in its projected all-inclusive form, is confronted with still another type of problem. At present, it must serve libraries whose operations are entirely manual, as well as those which are partially automated; within a fairly short time, some libraries which are almost completely automated will enter the picture. For the foreseeable future, then, Canadiana will need to maintain services for manual use, plan for and provide services for computer-assisted use, and do both in such a way that these can be combined by those libraries in transitional stages. It is not even possible to anticipate dropping or phasing out manual services, since these undoubtedly will continue for at least as long as any of us are likely to be involved.

If a Canadian "cataloguing-in-source" or "cataloguing-in-publication" project is contemplated and deemed feasible, Canadiana seems the obvious unit through which this should be conducted.

However, despite the wide variety of services which may be anticipated from and through Canadiana as some of these problems are solved, the standards employed must be those which have been determined collectively and which respond to the needs of libraries and their users. Effective standards cannot be imposed by a central agency; centralization may help to assure greater consistency in the application of standards, but these must be developed by those who are to use them.

The Practical

Achievement of standards requires that certain practical elements be considered realistically and frankly, or our good intentions and plans are doomed to failure.

There must be a permanent secretariat; initially, this may be only a single individual, even working only part-time, but volunteer committees, however valuable these may be in advisory capacities, will not achieve the set of objectives and standards needed. A secretariat also provides for continuity, since, unfortunately, standards do not remain standard indefinitely.

There must be a willingness to devote time and money to research. Most of the problems and the questions are not new, but adequate information is lacking on which intelligent decisions can be made.

There must be involvement of more than those interested specifically in cataloguing. Not only are the needs and views of reference and acquisitions and other librarians essential, but individuals from related fields such as publishing and computer science should be brought into the planning. There are organizations, such as the Canadian Standards Association, whose experience in creating and maintaining standards in other fields should be helpful here.

There must be sufficient impetus to move ahead. Haste may be risky, but speed is essential. Publishing will not wait for librarians to make up their minds, and computer applications will advance in libraries, with or without standards. Priorities must be set so that major projects such as a machine-readable national union catalogue can be undertaken before every refinement of a standard may be completed. Regions and provinces and individual libraries cannot wait indefinitely.

Finally, there must be money. Whether this is to be federal or provincial or private, or some combination, will depend on a wide variety of factors. Our goals cannot be achieved "for free," and some may be quite expensive. It is short-sighted and self-defeating to attempt to assume otherwise.

Conclusion

In closing, I should like to quote an excerpt from J.C.M. Hanson, for many years in charge of cataloguing at the Library of Congress and a pioneer in developing much of the cataloguing with which we are familiar today:

> "Among librarians there has always been, and presumably always will be, two opposing factions concerning the question of securing some co-ordination of cataloging rules with a view to furthering co-operation among libraries and nations. On the one hand are those who maintain that libraries should be permitted to develop in individualistic, or at least nationalistic, lines, who maintain that a primary consideration should always be to uphold and respect the traditions of the individual library or nation. On the other side are those who feel that co-operation and agreement on rules and forms can be furthered without undue interference with tradition and individual development.
>
> "...(There has been) a decided advance and improvement in the catalogs of even small libraries, traceable directly to co-operative efforts and to the fact that libraries and countries have been willing to learn and to borrow from one another. ...Much of the improvement is due to the willingness on the part of large and important institutions to yield on some of their pet traditions and to surrender a part of the individuality in order that they might participate more effectively in co-operative movements. ...(There is) no good reason why this progress and improvement should not continue along the same or similar lines.
>
> "It is the hope...that...studies may lead to greater co-operation and a better understanding on the part of librarians and bibliographers of the problems by which they are confronted in the increasing number and diversity of printed books and manuscripts, of which adequate record must be made, if they are to become readily available to students and investigators.
>
> "With a steady and rapid improvement in travel facilities, and the consequent increase in the number of scholars and investigators who come to rely on the libraries and book resources not only of their own countries but of the world, it has become obvious that it is the duty of librarians to seek for more uniformity in bibliographic records...in order that students shall not be obliged to learn a new system whenever they pass from one country to another.
>
> "...Absolute uniformity will probably never be attained, nor is it essential; but few can deny that, of the many disagreements and differences shown to exist, many can be eliminated without too severe a strain on national pride and idiosyncracies, without undue expenditures, or a too violent breach of long-established traditions."[13]

References

1 Anglo-American Cataloging Rules. Prepared by the American Library Association, the Library of Congress, the Library Association and the Canadian Library Association. North American text. Chicago, American Library Association, 1967.

2 "I.F.L.A. International Conference on Cataloguing Principles, Paris, 9th-18th October, 1961." Library Resources & Technical Services, 6:161-71, Spring 1962.

3 Lubetzky, Seymour. Cataloging Rules and Principles. Washington, Processing Department, Library of Congress, 1953.

4 Lubetzky, Seymour. Code of Cataloging Rules: Author and Title Entry. Chicago, American Library Association, 1960.

5 To appear in Library Resources & Technical Services, Spring 1970.

6 Library of Congress Information Bulletin, February 19, 1970.

7 Letter from C. Sumner Spalding, April 16, 1970.

8 LC report to ARL, January 1970.

9 Nelson Associates. Public Library Systems in the United States. Chicago, American Library Association, 1969. pp. 77-78.

10 Bregzis, Ritvars. Review of Regional Library Center in the Mid 1970's by Thomas Minder. Computing Reviews, 10:273, June 1969.

11 ANYLTS Printout, v. 2, no. 1, March 1970.

12 Canada. Bureau of Statistics. University and College Libraries, Academic Year 1967-1968. Ottawa, 1969.

13 Hanson, J.C.M. A Comparative Study of Cataloging Rules Based on the Anglo-American Code of 1908. Chicago, University of Chicago Press, 1939. pp. viii-ix, 135-36.

NATIONAL CONFERENCE ON CATALOGUING STANDARDS/CONFERENCE NATIONALE SUR LA NORMALISATION DU CATALOGAGE

National Library of Canada/Bibliothèque nationale du Canada

Ottawa

May 19-20 mai 1970

Resolution/Résolution

RESOLUTION

National Conference on Cataloguing Standards
National Library of Canada, Ottawa
May 19-20, 1970

WHEREAS the deliberations of this meeting indicate clearly the necessity of coordinating library automation efforts in Canada and the need for consistent study and action to achieve desired objectives in this direction, therefore BE IT RESOLVED:

I that we approve the Research and Planning Branch of the National Library functioning as a permanent secretariat for the coordination of the work of task forces;

II that the National Library in consultation with Canadian libraries and library organizations establish priorities and initiate task forces to investigate such topics as:

1) The expected uses of a machine-readable national union catalogue or national bibliographic data bank including methods of cooperative contributions to such a bank and possible charges for use;

2) The relevance of the specifications of British MARC and of classed searching to the Canadian bilingual situation and the use of LC classification;

3) The exact content of a Canadian MARC format;

4) The standardization of classification tables for Canadian history and literature with updating at the National Library;

5) Adoption of the Laval subject list as the provisional official list in French for use in Canada, with updating at the National Library;

6) Adoption of A List of Canadian Subject Headings (Ottawa, Canadian Library Association) as a Canadian standard for supplementing LC and Sears lists, with updating at the National Library;

7) The cumulation in one alphabetical sequence of all the indexes to the LC schedules, including those in Additions and Changes, and picking up cf. references throughout the schedules; this cumulation to incorporate the various Canadian adaptations of LC, as a possible basis for a preliminary study of the feasibility of a classed approach, possibly replacing LC subject headings, to catalogues based on LC;

8) The investigating of cataloguing-in-source for Canadian publications.

Moved by J. McRee Elrod
Seconded by Sister Francis Dolores
Approved unanimously

May 20, 1970